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INDEX THROUGH

THE DIFFERENTIAL DIAGNOSIS OF PERNICIOUS ANEMIA, WITH SPECIAL REFERENCE TO LEUETIC ANEMIAS*

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Reports of cures of patients suffering from so-called "pernicious anemia" are of comparative frequent occurrence; but, when we go into the details of these cases, we find that in nearly all of them the diagnosis of pernicious anemia was based upon so weak a foundation that the results are in no way convincing. Remissions of thirteen or more years' duration have been reported, and, therefore, we must regard all cures as unusually long remissions unless more conclusive evidence can be produced. Before going any further, I wish to emphasize that the term "pernicious anemia" should be applied to but one hemolytic anemia, namely, the idiopathic type, first described by Addison and Biermer.

During the past two and a half years, through my association with Dr. J. P. Schneider, I have been enabled to see and study an unusually large number of patients suffering from various types of anemias; and the finding of a number of cases simulating pernicious anemia in many respects, has impressed me with the necessity of a thorough study of these cases before the diagnosis of pernicious anemia is made, and a bad prognosis given.

Fortunately, all hematologists now admit that it is an utter impossibility to diagnose pernicious anemia by a blood-film examination alone; therefore a thorough study should consist of the following:

1. A most carefully elaborated history.
2. A complete physical examination.
3. A complete blood examination, including a hemoglobin estimate, a red-blood count, a white-blood count, a differential count, a study of the morphology of the red-blood cells, a blood-platelet count and a Wassermann test.
4. A complete urinalysis, including tests for urobilin, urobilinogen, and hemosiderin.
5. Examination of the stomach with the Boas-Ewald meal, and the fluoroscope.
6. Examination of the feces, especially for occult blood or for parasites or their ova.
7. In all cases, or at least in all cases where the slightest doubt exists as to whether or not we are dealing with a hemolytic anemia, a quantitative examination of the bile-pigments obtained with the duodenal tube.
8. A pelvic examination in females and a rectal examination in males.
9. A thorough neurological examination, including the tuning-fork test for impairment or loss of the vibration and joint senses.

While a great number of cases do occur between the ages of thirty and fifty, cases of idiopathic pernicious anemia have occurred in children and old people. Males and females seem to be about equally affected. Not infrequently several cases occur in the same family, and we recently examined a family in which the mother had a lymphatic leukemia and both son and daughter

*Thesis, presented before the Minneapolis Clinical Club, September 7, 1920.

a pernicious anemia, the son dying a short time later after a brief remission. The onset, except in a few cases which run a subacute fatal course, is insidious, and the symptoms vary according to the type. In one the disturbance of the hematopoietic-hemolytic system is most marked; in another, nervous symptoms due to spinal cord changes appear sometimes months or even years before any blood pathology can be demonstrated. In the third, gastro-intestinal symptoms stand in the foreground. In a few instances, unfortunately, the anemia becomes apparent after an attack of any of the acute infectious diseases, and the character of the malady is not recognized for some time. In nearly all cases at least one or two spontaneous remissions seem to occur, but no definite statement as to the number or duration can be made. Among the subjective symptoms, weakness and loss of color are probably the most common. Loss of weight may occur, but it is the exception rather than the rule; and the "fat type" is frequently seen. Gastro-intestinal disorders may be the chief complaint of some patients, but they are found in nearly every case, as an achlorhydria or an achylia exists probably in 100 per cent of the cases. This observation is in contrast with the reports of some investigators. The achylia is undoubtedly responsible for the usual complaint of nausea, vomiting, discomfort after meals, bloating, and constipation or diarrhea, but we have, so far as I know, no explanation for the frequent occurrence of a sore mouth, tongue, or rectum. The latter symptoms seem to be especially pronounced at the height of the attack, and improve during remissions. Subjective nervous symptoms, such as tingling in the fingers, and a numbness of the hands and feet extending as far as a glove or stocking would, are found in 75 to 80 per cent of all cases, and in one type, as mentioned above, cord changes may produce the only pathology demonstrable. Dyspnea is nearly always complained of, and in some cases is accompanied by angina-like attacks when the blood-count reaches a very low mark.

Upon physical examination we find, as a rule, a lemon-color of the skin, a slight icteric tinge of the scleræ quite in contrast to the pale ash-gray color found in malignancy.* In about 90 per cent we found that pressure over the sternum will produce severe pain, but this finding is by no means pathognomonic for pernicious anemia, as it is found in other severe anemias and in Kahler's disease, as well. The examination of the lungs is, as a rule, negative, but functional heart murmurs are nearly always found. In extreme cases, naturally, symptoms of cardiac decompensation may be found, for a fatty degeneration of the heart muscle occurs in any severe case of chronic anemia. The spleen may or may not be palpable, but is never found as large as in Banti's disease or in malaria.

The number of red cells, as a rule, is very much diminished (I have seen it as low as 600,000), more so than the hemoglobin, thereby producing a high color-index, but occasionally a low color-index may be found. The white cells are always diminished, except during remissions or during infectious complications. In the ambulant cases I have seen but once the white cells above 6,000, and in 90 per cent I found them below 4,500. While this leukopenia is not pathognomonic of pernicious anemia, I consider it one of the most important points in the differential diagnosis. The differential count may reveal a slight relative lymphocytosis, but it is not of importance. The number of blood platelets is decreased in all cases. In the study of the morphology of the red cells, I consider the finding of hyperchromasia (individual red cells stain darker than normal due to abnormally high hemoglobin content) and the finding of a large number of megalocytes and megaloblasts more characteristic of pernicious anemia than any other abnormality.

Urobilin and urobilinogen are always found in the urine during the hemolytic phase of the disease, and give confirmatory evidence of blood-destruction; but we must remember that in many cases the bone-marrow insufficiency may be more pronounced at the time we see these patients, and the pigments may be absent at that time. The finding of hemosiderin is considered by some of similar importance.

A thorough investigation of the gastro-intestinal canal should not be neglected. I would never make the diagnosis of pernicious anemia without the finding of an achlorhydria or achylia. The fluoroscopic examination is used as a safeguard against overlooking a bleeding ulcer or an early carcinoma.

We have heard a great deal about pernicious anemia caused by dibothriocephalus latus, but I have not been fortunate enough to see one of these cases. In every case the feces should be searched for parasites and their ova. Occult blood is seldom found in pernicious anemia.

*Ophthalmoscopic examination in early cases was nearly always negative, but in advanced cases frequently revealed retinal hemorrhages.

The value of the Schneider method of examining the duodenal contents for urobilin and urobilinogen, as a means of demonstrating excessive hemolysis, seems to me unquestionable. The contention of some writers, that the amount of these pigments varies with different diets, has been disproved by the recent work of Schneider. Personally, I consider the test, which is very easily performed, of the greatest importance in the differential diagnosis, and I believe it should be used in every doubtful, if not in every, case. Naturally it is not infallible, especially if performed by an inexperienced technician, but we must remember that there is not a single laboratory test that may not fail at times.

That nervous symptoms exist in about 80 per cent of the cases, either subjective or objective, has been shown by Woltmann. Twelve per cent of 150 cases studied by him complained of nervous symptoms only, and in 80 per cent of all cases tingling in the hands or feet was noticed by the patient, whether such objective symptoms of nervous involvement as the loss of the vibration and joint senses could be demonstrated or not. According to Woltmann the lesion par excellence is a subacute degeneration, which may begin in the posterior or the lateral columns of the spinal cord, or in both simultaneously. Multiple neuritis may occur occasionally. In several cases, the neurologist was able to make a diagnosis of pernicious anemia, or, at least, to suspect the disease long before the hematologist was able to prove any blood changes; and it was especially in this group of cases that the examination of the duodenal contents by the Schneider method proved decisive.

I shall now try to summarize the characteristics of other forms of anemia that may resemble, at times, idiopathic pernicious anemia.

1. Aplastic anemia.

This is a severe fatal form of anemia that always runs an acute or subacute course, entirely due to an aplasia of the bone marrow (no blood-cells are produced), no blood-destruction whatsoever, which differs from pernicious anemia in the following points:

a. The patient's skin is pale or ash-gray.

b. The hemoglobin and red-blood count are equally diminished.

c. The leukopenia is especially pronounced.

d. The red-blood cells appear practically normal.

e. The duodenal pigments are found decreased.

f. Hemorrhagic phenomena appear early in the course of the disease.

2. Anemias secondary to chronic bleeding.

Probably one of the most common forms of anemia seen, due to chronic or repeated bleeding from gastric or duodenal ulcer, carcinoma, fibroids, or hemorrhoids.

a. Skin pale or only slightly yellow, but scleræ always white.

b. Examination of the duodenal contents and the urine shows no abnormal pigment values.

c. The spleen is found increased only in complicated cases.

d. The hemoglobin is very much more diminished than the red cells, thereby producing a low color-index.

e. The blood platelets are always found increased.

f. The red cells appear chlorotic (pale center).

g. The leucocyte count is more or less diminished.

h. Examination of the feces reveals occult blood at times only if due to ulcer, and nearly always if due to carcinoma.

3. Anemias in carcinomatosis.

As a rue, we observe in connection with carcinomatosis of any of the various organs, anemias of the "chronic bleeding type," but distinctly "toxic types" are frequently seen, and an occasional report of a hemolytic anemia in a case of carcinomatosis may be found in the literature. Whether or not they really were true hemolytic anemias due to the carcinoma, has not been definitely proven in my mind, as we must remember the possibility of coincidental occurrence of several types of disease in the same patient. The anemia seen in cases of carcinoma of the bone marrow is always severe, but the blood-picture resembles a myeloid leukemia rather than a pernicious anemia on account of the occurrence of numerous erythroblasts, myelocytes, and myeloblasts, and an increase in the neutrophil polymorphonuclears.

4. Anemia due to chronic endocarditis.

Non-hemolytic forms of streptococci may produce a chronic fatal form of endocarditis, the early diagnosis of which is extremely difficult. Most frequently it is confused with early tuberculosis, hyperthyroidism, or typhoid fever; but I recently saw a case in which a severe progressive anemia and a splenic tumor led the attending physician to a diagnosis of pernicious anemia.

The following findings will establish the diagnosis:

a. A daily "picket-fence" temperature from the onset.

b. A leucocytosis with a marked increase in polymorphonuclear forms.

c. A blood culture nearly always shows non-hemolytic forms of streptococci, especially streptococcus viridans.

5. Hemolytic icterus.

The congenital type, sometimes wrongly called "familial jaundice," is probably never confused with pernicious anemia. As the history of symptoms dates back to infancy, the patients are, as one writer has expressed it, more jaundiced than sick, and a severe anemia is seen only in the later stages.

The following findings will establish the diagnosis:

a. The spleen is very much enlarged.

b. The red cells are smaller than normal.

c. Their resistance to hypotonic salt solution is very much lowered.

d. Vital staining with cresyl-blue shows many reticulated forms of red cells.

e. The urine shows large amounts of urobilin.

f. The duodenal values are unusually high.

The acquired type differs from the preceding in a few points.

a. The cell-resistance to hypotonic salt solution may or may not be lowered.

b. Auto-agglutination of the cells often occurs.

c. Recurrent attacks of anemia are more common, and, therefore, this type is more frequently confused with pernicious anemia.

In both types a normal or high leucocyte count is the rule.

6. Typus "S" of Tuerck.

An idiopathic hemolytic anemia differing from pernicious anemia by more intensive involvement of the liver and spleen, has been described by Tuerck, but is rare and has not as yet been sufficiently studied and defined.

7. Splenic anemias of the "Banti" or "Gaucher" types.

The pronounced enlargement of the spleen and the late occurrence of an anemia make the differential diagnosis of these conditions from pernicious anemia comparatively easy.

8. Chronic lead poisoning.

While I have seen severe anemias due to chronic lead poisoning, the marked changes in the morphology of the red and the white cells established the diagnosis without difficulty, even when the occupational history was negative and the source of the poisoning obscure.

We usually find the following:

a. Chlorotic cells and a low color-index.

b. Pronounced "stippling" of the red cells and polychromatophilia.

c. Eosinophilia.

d. Gums showing lead-line.

e. Marked gastro-intestinal symptoms, especially constipation with or without colic.

9. Hemolytic anemias due to chemical poisons.

These forms due to poisoning with nitrobenzol, potassium chlorate, and other chemicals used in the manufacture of explosives, were frequently seen during the World War, but the occupational history nearly always suggested the etiology of the disease.

10. Anemias due to intestinal parasites.

Probably most cases show an anemia of the secondary type, but hemolytic types resembling pernicious anemia may occur. A definite diagnosis can be made only by the finding of the parasites or their ova, but we must be careful not to blame some harmless inhabitant of the gastro-intestinal tract for the condition.

11. Luetic anemias.

Very little has been written the last few years regarding the anemias occurring in syphilis. That a slight reduction of hemoglobin occurs, even in the primary and early secondary stage, has been demonstrated, but this finding is of very little importance. We are especially interested in the various types occurring in the later stages of syphilis. I shall divide them into three groups:

Group A. Toxic cases.

Into this group fall the largest number of cases seen. The patients complain of a gradual loss of strength and a progressive anemia, which varies considerably in intensity. The skin at first has a pale color, but frequently changes to a yellow tinge. The spleen is always enlarged, and gummatous involvement of other organs sometimes can be demonstrated. The red cells are generally reduced to between two and three million, and the hemoglobin to about 40 or 60 per cent. The examination of the film shows marked changes in the size and shape of the red cells and many signs of regeneration, but the individual cells show the loss of hemoglobin, and hyperchromasia is only seldom seen. Macroblasts and macrocytes are exceptions, and the duodenal pigment values are not increased. In other words,

this type should offer no diagnostic difficulties to the trained hematologist.

CASES

CASE 1. Mrs. S., aged 47, was first seen in my clinic in October, 1919. She came in complaining of a gradual loss of strength, anorexia, and discomfort after meals. The family history was negative. She had had four children, all living and well; no miscarriages. She had been separated from her husband for more than ten years. Examination of the chest was negative, except for a functional heart murmur over the pulmonic area. The spleen was palpable about two fingers' distance below the costal margin. On the left lower limb we noticed a white punched-out scar of a sore she had had about seven and a half years before, which had taken about five months to heal. The laboratory report showed a red cell count of 2,350,000, a hemoglobin of 45 per cent, and a white cell count of 7,400. The differential count showed 57 per cent polymorphonuclear cells, 39 per cent lymphocytes, 3 per cent large mononuclears, and 1 per cent transitionals. Marked difference in size and shape and a pallor of the red cells were noticed. The duodenal values showed urobilin 800 units; urobilinogen, none; bilirubin, + +. The urine was negative except for a trace of albumin. The examination of the stomach contents showed 16° free hydrochloric and 34° total acid. The Wassermann test was strongly positive on several occasions, and remained so for some time after the patient had improved considerably under treatment.

All of these patients get well under antiluetic treatment.

In several cases we observed a severe anemia, which, while primarily luetic, was aggravated by a moderately severe metrorrhagia or menorrhagia. These patients look very much like persons suffering from pernicious anemia. The number of the red and white cells may be very low, but we find no preponderance of macrocytes, no hyperchromasia, no icterus, nor other signs of blood destruction. A diagnosis of malignancy is often erroneously made when the gummatous mass that causes the bleeding is found, and the Wassermann test frequently has to save the day.

CASE 2.—Mrs. G., aged 45, was first seen in September, 1917, exhibiting pallor and complaining of weakness and ringing in the ears. Her past history was negative except for scarlet fever at the age of seven. No confinements or miscarriages; irregular but profuse menstrual flow for the past two years. The hemoglobin was 26 per cent, the number of red cells 1,200,000, the leucocyte count 3,600. The red cells appeared chlorotic with marked difference in their size and shape. No signs of hemolysis could be detected. The uterus was found markedly enlarged, and a tentative diagnosis of malignancy was made. A Wassermann test was strongly positive, and upon further questioning the patient admitted that her husband had been treated for lues about five years before, and that she had had a skin eruption about the same time, but had never been treated.

Group B. Hemolytic cases.

In this group I have placed cases that show a typical hemolytic anemia sometimes resembling acquired hemolytic icterus or pernicious anemia if seen in a fairly advanced stage. While the patient may have the appearance of a person suffering from pernicious anemia, and the blood-picture resembles that seen in that disease, the pronounced or the irregular enlargement of the spleen will often tell us at once that we are dealing with a different disease. Some of these cases get well under antiluetic treatment, but in others where amyloid degeneration of the spleen or a chronic splenic tumor has developed, treatment is of no avail.

Case history: Mrs. G., 36, was first taken sick in January, 1918, with pallor and extreme weakness. She improved spontaneously, and remained well until the fall of 1918, when the anemia recurred. She was then placed in a hospital for four months and transfused three times. The consequent improvement lasted until April, 1919, when she was removed to the hospital again, where she remained until July. In October, 1919, she had another recurrence, and was again taken to the hospital and transfused three times. I saw this patient in February, 1920, and obtained the following additional data: She had been married for sixteen years, and had had two children and five or six miscarriages. Before the development of the anemia, in 1918, she had had frequent attacks of diarrhea for four or five years. Upon physical examination I found signs of cardiac decompensation and an irregularly enlarged spleen that protruded about five inches from the costal margin. No subjective or objective nervous phenomena could be elicited. The blood count at that time showed 900,000 red cells, 1,800 leucocytes and the hemoglobin was 20 per cent. The cells showed marked changes in size and shape, and many of them showed hyperchromasia. At that time I could find an occasional macroblast and a few normoblasts. The blood-picture certainly was that of a pernicious anemia, but the size and form of the spleen forbade this diagnosis. The duodenal values were normal, but later we found, repeatedly, urobilin in the urine. The Wassermann test was strongly positive. This patient improved rapidly under treatment of neosalvarsan and had a relapse after antiluetic treatment was stopped, in which the spleen enlarged to about four times its normal size, but again improved when arsenic treatment was resumed.

Group C. Combination forms of pernicious anemia and lues.

These cases are true examples of pernicious anemia, as shown by the course of the disease, the pigment values, the blood-picture, and the final outcome, namely, death in spite of antiluetic treatment. Nobody has been able to decide whether or not the lues has anything to do with the development of pernicious anemia, or if it is incidentally occurring in patients suffering from lues. Tuerck believes that lues may be one of the many causes which, combined, may bring on pernicious anemia, but others have opposed this view. Some of these cases respond temporarily to arsenic medication only to relapse after various periods of time.

The following case is a typical example of this group:

Case 4.—Mr. E., aged 56, was seen in May, 1919, complaining of numbness and tingling in his hands, nausea, and weakness. Family history was negative. Past history was negative except for possible chancre or chancroid, twenty-five years before. The physical examination was largely negative except for a soft heart-murmur at the apex. The spleen was palpable. The joint and vibration senses were normal at that time, but were found impaired on subsequent examination. The blood examination showed 60 per cent hemoglobin, 2,560,000 red cells, and 5,400 white cells. Macrocytes were numerous; poikilocytosis very marked; and hyperchromasia definite. The Wassermann test was + + + + on several examinations. The duodenal values at that time showed an enormous increase (total 16,000 units). This patient improved temporarily under arsenic medication, but is dying at the present time with a typical picture of pernicious anemia.

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HEALTH LEGISLATION*

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It has been my privilege to represent the State Board of Health at each Legislative Session since 1913, and to observe the attitude of our lawmakers in matters pertaining to medical measures, an experience which has caused me to revise my ideas in presenting our requirements to legislative bodies.

The first legislation we had in South Dakota was the Act of 1885, which created the territorial Board of Health, consisting of the Attorney General, who was ex-officio president, and a vice-president and superintendent, to be appointed by the Governor. This Board had large powers in protecting the public health, and provided that every physician must be a graduate of a reputable medical college, or, in lieu thereof, pass an examination before the State Board of Health and two other appointed physicians.

The 1885 enactment was superseded in 1891 by a law creating a State Board of Health, consisting of three resident physicians of good standing. This Board had no discretionary powers in licensing physicians; if each applicant could show a diploma from a reputable medical school and a certificate of good character the Board was bound to license him. It had ample power to protect the public health, but never was provided with adequate funds to carry out its provisions.

Through the efforts of the South Dakota State Medical Association, the Act of 1903 was written on our statute books creating a Board of Medical Examiners. This law left all matters pertaining to public health and sanitation to the old State Board of Health. We then had a State Board of Health, inactive because it had no funds to carry out its provisions, and a State Board of Medical Examiners. The State Board of Health, at the time of this enactment, had an appropriation of $750 per annum, which sum was maintained until the 1913 act became effective.

In 1913 a bill was drawn by this association in which an attempt was made to increase the efficiency of the State Board. This 1913 law, with a few modifications, is in force at the present time and combines the State Board of Health and the State Board of Medical Examiners. We succeeded in that year in securing an appropriation of $5,038. Since that time the appropriation has been increased to $21,000, and although the appropriation is still inadequate to allow the development of a standardized health department, we feel that the Legislature has shown a desire to

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give more adequate financial assistance to the medical department of our state government.

The results of our work under the present law have been the raising of the standard of medical licentiates; the establishment of a sanitary code, which extends beyond the provisions of our appropriation for its consummation; and the development of a health department that ranks, as far as provisions go, with the departments of other states having about the same population.

The public is rapidly becoming inclined to view the health problem of our state as one of considerable importance, and it only requires the right kind of public education, the proper general directing, and the co-operative influence of the medical profession and those already interested in public health work to bring about a more perfect adaptation of our sanitary policies.

The general trend of medical men today in looking forward to the ideal methods of maintaining efficient community service, is to adopt the clinic form of practice. We have been brought more and more to understand the value of co-operation and group effort. Physicians find that by associating themselves with men skilled and highly educated in specialties a larger measure of benefit is meted out to the patient and a more satisfactory accomplishment of their work maintained. This idea should be adopted by health organizations. I am of the opinion that no health department is properly equipped that does not provide for an executive officer surrounded by men skilled in the special activities necessary to carry out a modern health program. Many of our health organizations in other states are adopting, or have adopted, this plan.

We have today a multiplicity of governmental and extragovernmental health organizations that are assuming to undertake the administration of various health activities. An illustration of the haphazard method, rather than the orderly and systematic methods that should prevail, is the overlapping and duplicating system maintained at Washington.

There are at the present time many bills pending in Congress involving matters of public health and emanating from various departments, bureaus, and divisions:

The Department of Labor is asking for legislation to promote the interests of child welfare.

The Commissioner of Internal Revenue is asking for legislation and appropriations governing the enforcement of the Harrison law for the control of narcotics and the use of alcohol for medicinal and scientific purposes.

The Department of Agriculture is asking for laws and appropriations for the enforcement of the Federal Food and Drugs Act.

The Department of the Interior is asking for legislation and appropriations controlling the general welfare and health of our Indian population.

The Department of Commerce is asking for legislation and appropriations to be used in the tabulation and publication of statistics regarding births and deaths, a factor of health administration that is considered the foundation of all health work.

To illustrate this incoördinate and disorderly method, the following bills at the present time before Congress will form a striking example:

Senate Bill 233, introduced by Mr. Robinson, provides for a system of state aid in maternity and infancy, which carries an appropriation of $11,800,000.

Senate Bill 814, introduced by Mr. Owen, provides for an executive department to be known as a Department of Health, with a blank appropriation to meet the expense of the new department.

Senate Bill 1017, introduced by Mr. Smith, provides for an executive department to be known as the Department of Education, and an appropriation of over $100,000,000.

Senate Bill 2507, introduced by Mr. Sheppard, provides for a Federal board of maternal and infant hygiene, with an appropriation of $20,880,000.

H. R. 5724, introduced by Mr. McDuffie, provides for a department of health and an appropriation of $10,000,000.

H. R. 10510, introduced by Mr. Mann, provides for a bill prorated among the different states for the development of local health work, with an appropriation of $2,500,000.

The aggregate appropriation made by these measures amounts to over $200,000,000.

This incoördinate attempt at public welfare legislation is brought about by the lack of a National Department of Health, with powers to unify and recommend all necessary legislation, which would avoid through its administration this duplication of effort and unnecessary expense; and it is through an organization of this kind that the work of all state departments would be coördinated. Through them we would receive advice and instruction; receive assistance in the conduct of interstate investigations; receive aid in the study and control of serious epidemics; and secure trained health workers when

needed in our state and municipal work. Both State and Federal health officers realize the futility of practical and effective work in the field of public health without a perfect system of coöperation, and that no organization, or group of organizations, can obtain the full measure of their efforts without an executive whose administrative ability would preclude any duplication of individual effort.

The necessity for more effective sanitary measures has long been felt by people not engaged in public health work, and as a result many allied and kindred societies have sprung up under various names, with organizations varying in efficiency and activity; health societies looking forward to public welfare, working for a single end, but under separate direction, diversely financed, with their activities so overlapping and interlocking that we find entirely too often evidence of friction leading up to contentions, which, if allowed to continue, will seriously interfere with the execution of the most carefully prepared program. This situation not only involves a financial waste and loss of effort, but creates an antagonistic feeling among those interested in this work, which could and should be avoided by a well-directed coöperation of those agencies.

MEDICAL LICENSURE

In this state and in other states medical licensure is administered through complex and conflicting laws which have boards created for the purpose of licensing those who wish to treat diseases; and before the medical profession can establish itself on a substantial, self-reliant, self-respecting basis, it must secure the enactment of a comprehensive educational standard law which will apply to all practitioners of the healing art, without regard to the particular school or method of practice they advocate. This law should be so framed that every applicant for medical licensure, notwithstanding the method he elects to use in the treatment of human disorders, should pass an examination that will demonstrate his knowledge and training in the fundamental sciences necessary to the proper understanding of the profession in which he wishes to engage. Under this plan the medical practice act as it stands on our statute books today would be swept aside, and one adopted creating one board of registration, one standard of educational qualification, one examination, including practical laboratory tests and providing that all applicants have a reasonable preliminary education.

The obligation the Legislature assumes by the enactment of a medical practice act is the obligation of the State for the protection of its citizens. The laws so enacted should not be contradictory and should be passed with a full realization that every citizen of our state desires to employ the physician of his choice, and that physician should be free to employ any method that he deems most effective; that when the State, through its qualified officers, issues a certificate of medical licensure, it be a guarantee of the licentiate's knowledge of the science and the allied sciences necessary to qualify him in the practice of the healing art.

My experience in the administration of the laws of this state has demonstrated to me that our medical practice acts, not only in South Dakota, but in other states as well, intending, as they do, to supervise the practice of medicine, are entirely wrong. The impression is largely prevalent that all medical practice acts are designed solely for the purpose of eliminating competition and protecting regular practitioners. From observations I have made at Pierre, when the chiropractors were attempting to secure State recognition for their so-called profession, I believe that the methods adopted by the medical men in South Dakota have been erroneous. The activities of the chiropractors in trying to secure this legislation, and the activities of the medical men in attempting to defeat it, have not received the serious consideration from the public or the legislative members that they should; in fact, many of them have believed that the medical men were seeking to prevent the chiropractors from becoming licensed from selfish motives; and I feel that when medical men endeavor to defeat them they weaken their professional standing, and they should refrain from taking sides in a controversy of this kind.

If some sane and equitable legislative act is not adopted the chiropractor bill, which has appeared at the last two legislative sessions and been defeated, will appear at each successive session until it passes; and after the chiropractor law has been written on our statute books other fads will spring up, clamor for and receive recognition until our South Dakota code will contain a mass of confusing, ambiguous, and conflicting laws. With this possibility confronting us, I am fully convinced that our present medical licensure laws should be repealed and a comprehensive educational qualification act be adopted.

DISCUSSION

Dr. H. T. Kenney, Pierre: Dr. Jenkins and I have threshed out this subject of medical legislation for

a great many years, and I heartily agree with what he said in his paper.

There are one or two points I want to impress upon your minds. We started out here with good intentions, and carried our ideas up to Pierre; but, gentlemen, I have lived in Pierre sixteen years, and I know the attitude of the legislative body toward us is entirely different from the attitude we take toward ourselves. When the chiropractor bill first came up it got by the House, and the only way we were able to defeat it was by going up to the Senate and putting it up to them and showing them that by their legislative acts they had compelled us, from the time we had left the kindergarten school, to spend four years in a high school, two years in a college or its equivalent, four years in a recognized medical school, and one year in a hospital as an interne before we could practice medicine in South Dakota. By putting this matter clearly before the senators and by the grace of God (we had three of them in the hospital as patients) we succeeded in having them vote against this bill, and the bill was defeated. I believe we should make every effort this year to organize, and I believe we can organize with the dentists and with the osteopaths. I have talked to a great many dentists and osteopaths who will be in favor of a unit law on medical examinations, that is, on the basic work, so that any man or woman coming into the state must take this examination. If we do that, we shall do away entirely with the chiropractors and that class who are always coming into our state.

There comes up again the question whether it would be a good thing to take the Examining Board away from the Board of Health and, having it down in the State University, turn it over to Dr. Spafford, and do a great deal as we did with the legal profession. When one wants to practice law in South Dakota he goes up to the Supreme Court, and they give him his examination. Why not have the Examining Board at Vermilion in the State University where those who want to practice medicine in South Dakota can be given a proper examination, and where they have the advantages and facilities for giving the right sort of examination on the basic principles. The different departments, such as the dentists, should have a representative, and the osteopaths should have a representative on the Board, as well as the homeopaths and regulars. The primary work is given in the State University. It would be a good thing if we could have that condition brought about. There are a few suggestions I would like you to think over.

I do not know whether I am going to be a member of the Senate or not. I have a good Democrat running against me. I expect to be in Pierre and to work for the South Dakota medical profession in the legislature, and if any of you have ideas, do not put them in a bill, but send them to us and we will try to incorporate them in a bill and see if we cannot get them across.

Dr. I. Pemberton P. Hollingsworth (Sioux Falls): Dr. Jenkins spoke of vital statistics being taken care of by the State Board of Health.

President Alway: Vital statistics have been turned over to the State Board of Health, and, if they can get enough money to take care of that, they will do so at once.

As regards the Board of Health, the help all quit because they could not pay them enough money, but the State Board of Health will get it as soon as they can.

Dr. H. J. G. Koobs (Scotland): We have for years past considered this topic pro and con. Various efforts have been made on the part of the Association and individual members to do some real service for the profession and for the people of the state as a whole by having proper legislation enacted. There has been a multiplicity of effort perhaps and not concerted action on the part of the profession of the state. I feel most of the work has been done in a haphazard sort of way and with the idea that it is necessary to have some political pull to do anything; and for that reason it was necessary to do some lobbying and things of that sort, which does not seem to have been effective in producing the desired result. Some of us have had conversations in regard to this matter with men of influence and prominence in politics, and it has been suggested to us by some of them that if we desire to accomplish anything, perhaps the best way would be to have the legislature appoint a committee themselves, a committee of investigation, to report to them the needs of the profession of the state, and then formulate them in such a way that the legislature could handle it, and then it would be really a protection to the people and not seem like favoritism on the part of a certain class, but it would be constructive legislation that might be supported by every one. That has seemed to me the feasible way of attacking this problem. I am sure if representation could be made to those members of our legislature who would be willing to interest themselves in this cause, they could bring this about, and very likely the profession of the state would be given an opportunity practically to name such a committee, which would be reasonable and feasible.

Whether or not we should take any action in general session along this line, or whether this should be left to the house of delegates, I hardly know; however, I want to throw out this suggestion to you, for I think it is the most feasible way of getting at the proposition.

Dr. L. G. Hill (Sioux Falls): I did not hear all of the paper of Dr. Jenkins, but I think this is a question in which we are all vitally interested. We have made a little progress in the last eight or ten years in medical legislation. After a few years of service on the State Board my opinion is, that one reason for the attitude of the legislature is, that the medical profession is jealous of the different cults that are coming up, and our continued opposition spurs them on. Personally, I think the day is not far distant when the chiropractors will be recognized in most of the states, whether we want them or not, and they will accomplish their end hereafter, and I think the way for the medical profession to do is to let them go ahead. I do not think we can prevent them from being recognized. We fought the osteopaths for a long time, and the more we fought them the harder they worked to get their board and to receive recognition, and it will be the same with the chiropractors. They have a sinking fund, a fund of money furnished by the school, to lobby at the sessions of the legislature, and they will keep at it. Let them go ahead and have their board. They will keep going, and after we are dead they will be still springing up. As a medical profession, we have got by our organization

and labors to be superior or to rise above the other fellows if we are able to do it. It is the survival of the fittest, and if we are not able and strong enough to create a demand for our services, then it is up to us to take a back seat and let the chiropractors come in and get the business. The very opposition of the medical profession is the thing that spurs these fellows on all the time.

In California they have a united board of osteopaths, chiropractors, medical men, and so on.

I agree with Dr. Kenney, and I think with the president of the Board of Health here that the medical board and health board ought to be divorced. The health board ought to be on duty all the time. Their work is of a different type. The board of examiners needs only to meet occasionally, and that can be done as suggested by Dr. Kenney or in any other way. It was a step in the wrong direction when the two boards were consolidated. I think the Board of Health has enough to do with their own work, and I think two boards would be much better.

I would like to call your attention to the optometrists' bill. You will remember how the eye and ear men of the state made a fight for years and years and that we did not want spectacle vendors recognized. At that time I advised that they be recognized; that we would be better off. Spectacle vendors, jewelers and optometrists are now recognized and have their board. The eye men thought it was a dreadful thing, but we are better off than we were then. The chiropractors are busy; they are making money; they are going to have their board. Let them have it, and we will be better off than to keep on fighting them.

Dr. B. A. Bobb (Mitchell): Many of you doubtless noticed in the *Journal of the American Medical Association* an item to the effect that representatives of the chiropractors appeared before the legislature of Ohio and wanted licenses to practice. They wanted recognition. The head of the medical department said that if the legislature wanted to license them to go ahead; that he had nothing more to say and would not argue against such a step being taken, and in that way they killed the bill in Ohio.

In Davison county at the present time there are more cases of smallpox than they have had for some time. It has raised a devil of a stink because the quarantine has not been enforced. When the people are educated in regard to the importance of such a law and its enforcement, they will go to the legislature themselves and get what they want.

Dr. H. Gifford (Omaha, Neb.): I heard Dr. Victor C. Vaughan, a teacher of mine, give an address on medical legislation and general education, particularly with reference to vaccination. The ground he took was, that the time would come when physicians would stop trying to do what they could for the people; that the people who knew enough to be vaccinated would be vaccinated, and the people who did not know enough to be vaccinated were subjected to the risk of having smallpox, and that it should not bother us as physicians if they were not vaccinated. Dr. Vaughan thought a policy of that kind would be carried on before many years, and that people who had not been vaccinated would be mighty glad to have their children vaccinated. I am not prepared to say that is not a logical position to take.

The same thing applies to the question of medical education. The position which was taken by the profession in Ohio is a logical one and indicates the remedy. We have a lot of sects, and have always had them. We have fought against their recognition; they keep on coming up and up, and they make trouble until they get recognition.

There is a vacuum in the minds of most people. Homeopathy was gradually put on the shelf, and then osteopathy came in. When you get that hole filled up with a mass of information and general education and training, you will not need a defense to fill the hole. The fundamental remedy is a better system of education, a more thorough and complete system of education, and when you get the men who work in a packing-house to thinking that their children should have the same education as your own children are getting, then you will find they will not be running after false gods, as they are now, and in time you will find the substratum of intelligence will not permit such things as chiropractors.

Dr. Jenkins (closing): I believe the suggestion Dr. Koobs made about having a legislative committee appointed to study the matter and see what requirements are necessary for legislation is a good one. They are doing that at Washington. The Senate has appointed three men as a committee of investigation to see what legislation is needed and what is not needed.

I can hardly agree with Dr. Hill that we ought to let the chiropractors and all the rest of the cults have a licensing board. As long as the State puts its seal of approval on these cults—chiropractors, naturopaths, etc.—the people naturally believe they are just as good as physicians. Of course, it will be a case of the survival of the fittest if the chiropractors are legalized, and I think they are at the present time taking about a million dollars a year out of their practice, that is, they are taking about a million dollars out of the pockets of the legally qualified physicians. They will do that for the reason that 95 per cent of the sick do not require a physician—they get well without one. The business of practicing medicine will become more or less unprofitable.

Referring to smallpox from the standpoint of public health, I will say I have been on the Board of Health since 1913, and I do not remember a single case of contagious or communicable disease reported by any one outside of recognized physicians. No chiropractor reports such a case. Most of our contagious diseases spread by calling in men who are not qualified to make a diagnosis.

I think the Legislative Committee of this Association ought to take some step to see that we have a proper education law passed; then any one who wants to practice medicine will have to take that examination. It ought to be done before the chiropractors get their law. It must not apply to any one prior to its enactment. Right now this Association should take some steps toward that end. In previous years we have done nothing. We have spent a few dollars for legislative purposes, but the chiropractors have had an attorney fighting their battles. Physicians themselves have not done anything. If they wish to protect themselves as do other bodies, it is time for them to get busy right away.

THE HANDLING OF A CASE OF GASTRIC ULCER BEFORE SURGICAL PROCEDURE SHOULD BE RESORTED TO*

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The diagnosis of gastric ulcer, whether acute or chronic, with or without manifest hemorrhage, has for the purposes of this paper been established, whether from long-continued history of hyperacidity and ulcer pains with tarry stools or from copious hematemeses, together with a history of disturbances, such as those just mentioned. Assuming that the case under discussion is eventually to come into the hands of the surgeon for cure, we will choose a case of acute gastric ulcer with manifest hemorrhage. It is perhaps generally accepted, or, at least, it used to be so accepted, that the big indication for resorting to surgical procedures is hemorrhage. This is only partly true, as we shall endeavor to show. It is gradually being admitted, even by the surgeon, that the bleeding gastric ulcer belongs, first of all, to the medical rather than to the surgical field of treatment. Often it happens that when the patient seems most in need of surgery he is least able to endure the strain and shock of operation. This is true to an unusual extent of the gastric ulcer patient who has suffered one or more severe gastric hemorrhages. He is exsanguinated; therefore he cannot stand the additional strain of an operation. Consequently it is to medicine that we look for more promising results in this field.

The term surgical treatment as here used means operative treatment and does not include the use of ice bags, poultices, lavage, etc.; more correctly speaking, it does not preclude the use of these measures by the medical man.

Given, then, a case of gastric ulcer with hemorrhage. The patient has vomited a quantity of fresh blood; he is in syncope. What are the indications? Briefly put, they are as follows:

To check the hemorrhage.

To prevent recurrence.

To treat the anemia.

To treat the underlying condition.

The following are measures to be taken:

1. Put the patient to bed as quickly and as quietly as possible. If he is in syncope, do not attempt to revive him, as stimulation is almost sure to produce a second hemorrhage, which might easily be more serious in its consequences than the first. Syncope is nature's first heroic effort to stop the bleeding. We know that the effect of a sudden severe anemia is to produce, reflexly, a vaso-constriction, and this, in the presence of diminished heart-action, favors the formation of thrombi in the mouths of the bleeding vessels occluding them. It is plain how unwise stimulation at this time will defeat the purpose of our treatment and so place the life of the patient in greater jeopardy. Should the patient not be in syncope, our first business is to enforce rest upon him by giving sedatives and opiates, morphine and atropine, the former to its physiological effect. These are to be given hypodermatically for the reason that, while we are trying to enforce rest as to the patient's movements, we are equally concerned in establishing gastric rest, both motor and secretory.

2. Facilitate firm contraction of the stomach by application of the ice-bag or the ice-coil to the epigastrium. It is an established fact that in many cases of ulcer with hemorrhage the stomach is in a condition resembling acute dilatation, in which condition it offers an added difficulty in controlling the bleeding.

3. In extreme cases a local abdominal anemia may be favored by the application of constricting bandages to the limbs, thus preventing the venous return flow.

4. Gastric lavage is highly recommended by Kaufman and others. It has the advantage of ridding the stomach of stagnating contents or accumulated secretions. It makes possible the introduction of local remedies, and favors muscular contraction, which, as noted above, tends to check the bleeding. Needless to say, the passing of the tube must be skillfully done, in order to avoid exciting the patient or causing convulsive contractions of the stomach.

5. Of all internal remedies given for the control of gastric hemorrhage in cases of ulcer, bismuth (the subnitrate, preferably) perhaps holds first place. The results obtained are due largely to its mechanical action. The gastric mucosa in cases of ulcer is, as a rule, in a highly irritable state. Bismuth tends to reduce this irritability by forming a mechanical coating, and tends further to check hemorrhage by finding its way into the ulcer excavation, where its presence markedly favors clotting, at the same time protecting the ulcer from further erosion by the action of the gastric secretions.

6. Adrenalin, whether applied locally or giv-

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en subcutaneously or intravenously, produces a more or less marked vasoconstriction, but the reaction to this constriction is one of unusual relaxation, hence it is of little real value in these cases and is mentioned to be condemned. Likewise the giving of ice pills or cracked ice by mouth does not produce the effect for which they are given. It offers the further disadvantage that its presence in the stomach might tend to stimulate peristalsis as well as secretory activity; both would tend to defeat the results aimed at.

7. Other drugs depending for their styptic action on their chemistry have proven, in practically all cases, unreliable and ineffective in the hands of clinicians who have a wide experience in this class of cases. Calcium chloride, the sera, etc., are referred to.

To prevent recurrence of hemorrhage while the patient is under treatment:

Enforcement and adoption of the measures already described, together with the treatment of the ulcer and the underlying condition, are required.

Treatment of the anemia can be undertaken only in connection with treatment of the ulcer proper and the condition underlying it. Active measures are not indicated and are not employed. Drugs may produce nausea and vomiting, disturbing the gastric rest so essential in the treatment of the ulcer. Salines are not means of controlling hemorrhage or combating anemia for reasons already stated. The anemia then is treated by building up the patient.

Treatment of the underlying condition may be discussed under three headings, rest, drugs, and diet.

1. Rest.—In most cases of gastric ulcer the stomach is in a high state of irritability. It matters not whether this be cause or effect; it is the symptom we must deal with first of all after the hemorrhage has been checked. Physical rest is to be enforced on the patient in order to reduce his need for food to a minimum with the least possible discomfort. Gastric rest should be the outcome of that. It means freedom from the irritating effect of gastric secretions, whether from excess or from stagnation. It means freedom from the effects of mechanical irritation due to the ingestion of food or drink. It means freedom from reflex irritation resulting from appetizing food odors or excessive alimentation. For the body, rest in bed; for the stomach, a short period of starvation followed by a period of rectal feeding, usually from one to three days, depending upon how well the feedings are tolerated and the state of comfort of the patient.

2. Drugs—To protect mucosa, to neutralize acid, to inhibit excessive secretions. Atropine has been used successfully to inhibit the gastric secretions. Morphine increases the mucous secretion, which is held to be beneficial for two reasons: first, the mucus forms a slight mechanical protection to the gastric mucosa; secondly, it dilutes the HCl, making the gastric juice less irritative and less apt to act upon the stomach itself. Morphine is objected to by others as interfering with proper elimination, the effect of which is rather difficult to overcome. It is indicated, however, where the patient is inclined to be restless; besides, during the period of starvation and rectal feeding it renders him less sensitive to hunger.

Mechanical protection from the irritation due to gastric secretions and the stimulating effect due to the presence of food is best secured by the exhibition of bismuth in large and frequent doses. It has the added advantage of arresting hemorrhage and protecting the ulcer from further digestive action of the gastric juices.

The irritating effects of the gastric juice may be largely diminished by neutralizing the HCl. For this purpose sod. bicarb. is most commonly used. The chemically pure product only should be given, as the impurities in the commercial product when taken in large quantities are sufficient to produce untoward symptoms.

Silver nitrate is sometimes used to stimulate the formation of granulations in an indolent ulcer which does not respond to the means already mentioned. Lavage is a most useful method of relieving gastric irritation when due to stagnation of contents.

3. Diet: a. Rectal feeding. The object of rectal feeding is to rid the stomach of all activity both motor and secretory. It may be begun in from twenty-four to forty-eight hours after the patient has been put to bed, and continued from one to three days, depending upon the condition of the patient and the tolerance of the rectum. It may be continued longer if the nourishment of the patient does not suffer. Nutrient enemata should not be given oftener than every three or four hours, and should be preceded by the injection of a small quantity of physiologic salt solution as a cleansing and soothing measure. A great variety of formulæ are extant. Body fluids

may be increased and thirst quenched by giving salines by the Murphy drip method. Distention of the rectum must be scrupulously avoided.

b. Mouth feeding. Three things should be true of the early diet given by mouth:

1. It should be liquid, in order to avoid, as far as possible, mechanical irritation of the mucosa and the ulcer and to facilitate its easy passage through the stomach, avoiding excessive peristalsis.

2. Its character should be such as not to stimulate unduly gastric secretion. It should be as far as possible "unseasoned and unspiced."

3. Its composition should be such as to combine with, and hold in combination, the elements of the gastric juice. Excessive free acid, as shown by analysis, should be promptly neutralized, in order to prevent its attacking the gastric mucosa. Bicarbonate of sodium may be given every two hours. To determine the excess of the digestive juices in the stomach the contents should be aspirated at least once a day during the early part of the feeding regime, preferably two hours after the evening meal. Examination will give us some idea as to the motor activity, and analysis will show how successful the treatment has been in diminishing the gastric secretion and indicate the need and dosage of the alkalies to be given in further treatment.

To be sure of results the diet must in many cases be continued for months. It is always advisable to check up on the results by making analysis of the gastric contents. After six months a final test should be made to determine whether permanent good has resulted from the treatment.

When rest has been properly enforced, when a proper diet has been carefully adhered to, and the patient has gained his former strength, if he suffers from a hemorrhage in spite of diet and proper precautions in his habits of living he should return to the medical man for a second and even third trial. Each succeeding course of treatment should cover longer periods of time, and the progress be more carefully checked up. If the treatment has failed, let him go to the surgeon.

VARICOCELE OF THE BROAD LIGAMENT*

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This subject is one that is universally recognized by even the surgeon of moderate experience, but one that has received very little attention by either surgeons, essayists, or authors. The latter fact may be easily verified by going over the recent medical literature, including the latest text-books. I was able to find only six references for the last six years. The articles which have appeared at irregular intervals have been written, mostly, by gynecologists, and they all deplore the frequency with which the condition is unrecognized and untreated, and implore the general surgeon always to have the condition in mind and, when it is present, to institute the proper treatment.

I am convinced that the condition is present in a greater number of cases than is generally believed. It is responsible for a great many of the symptoms for which pelvic operations, such as suspension, curettage, perineorrhaphy, trachelorrhaphy, etc., are performed, and as a necessary result, in these cases, most of the symptoms remain, and the outcome is usually far from satisfactory.

My attention was especially called to this subject, a number of years ago, from a purely negative phase, that is, from results that did not materialize after operating in the pelvis on a certain class of cases. From that time on, I have always been on the lookout for this condition, and the number of times that I have found it is, indeed, surprising. It not only complicates man of the conditions found in the pelvis, but is, I believe, the prime factor of many symptoms, referable to the pathological condition of the organs of the pelvis, that we have hitherto wrongly diagnosed or left undiagnosed.

It is very often missed because of the methods used in exploring the pelvis. Ordinarily, after opening the abdomen the intestines are drawn out of the pelvis by means of inserting one towel after another until we have them securely fastened in the upper abdomen, or else we use the Trendelberg position. Both of these methods tend to empty the veins in the broad ligaments, and their dilated condition and tortuosity disappears.

They may be easily visualized or palpated by avoiding this technic and, instead, passing the hand gently into the pelvis and pushing back the

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intestines without drawing them up. Even if the veins have been emptied by virtue of the position, the dilated and tortuous condition can easily be made evident by a little pressure on the ovarian and uterine veins at the upper and lower portions of the broad ligament.

This condition is very frequently associated with other pathological conditions of the pelvis, such as prolapsus, tumors, adhesions, etc., and no doubt in these cases is a secondary condition. We expect and find it in all cases where there is an impediment to the return circulation from the uterus.

As you will recall, the veins in the broad ligament are very large, comparatively, and are made up principally of veins from the uterus and ovaries. In the gravid condition these veins in the uterus are very large and terminate in lakes. After delivery they are compressed, so to speak, by contraction of the muscular tissue of the uterus; but this influence and support are wanting in the broad ligaments, and the veins here, which are also greatly enlarged during pregnancy, are consequently predisposed to permanent enlargement. The veins in the broad ligament, also, communicate with the plexus of veins about the base of the bladder from the vagina and rectum. Congestion of these organs places upon them a further duty, in addition to that of draining the uterus and ovary.

The additional fact that the left ovarian vein empties into the left renal vein, and at right angles, explains the fact in all probability that this side is affected more frequently than the right. When we consider this condition and, in addition, the fact that there are no valves in these veins, we can reasonably assume that varicocele of the broad ligaments should happen frequently.

Etiology.—The causes of varicocele of the broad ligament may be considered under two headings: *predisposing* causes and *active* causes.

Of the *predisposing* causes, we have, first, the peculiar construction of the veins as above described, and, secondly, the general build of the individual. It is a fact that this is a primary condition in a large number of women who are neurotic, thin, having a general ptosis of all the abdominal organs, and a medley of conditions indicative of lack of tone.

As *active* causes, retroversion, prolapsus, tumors of the broad ligament, ovary, and uterus, infections and adhesions in the immediate vicinity of the broad ligaments, play the most important part. These all act more or less mechanically in obstructing the uterine and ovarian circulation.

In cases of marked retrodisplacements with prolapsus of the ovaries, we have an actual kinking of the blood-vessels, and in all these conditions the pressure or kinking is much more effective in the veins than upon the arteries because of their thin walls, their lack of resistance, and the absence of valves. Perineal laceration, by virtue of its lack of support, sooner or later, brings on malposition of the uterus and adnexa and predisposes to varicocele of the ligaments. Zinke correctly thinks that all undue intra-abdominal pressure, from whatever cause, should be added to the list of active causes; also, repeated abortions, frequent application of forceps in deliveries, and operations upon the cervix and pelvic organs.

I would add to the above causes one that I consider even more frequent than any mentioned, and that is the getting about too soon after confinement, abortions, and miscarriages. The very prevalent idea among the laity that ten days after confinement, and two or three days, or none at all, after miscarriage and abortion are sufficient to remain in bed, is erroneous, as the time is far too short for the parts concerned to return to their normal condition. This must be so after long and difficult labors or instrument cases, and, especially must it be so after miscarriages and abortions, where the process is a pathological one. I have often thought that a great opportunity presented itself to the medical profession to dispel this idea and prevail upon our patients after these conditions to remain longer in bed.

Symptoms.—As stated above, the condition is very frequently associated with other pathological conditions in the pelvis, and, as a result, the symptoms are varied. I can do no better, perhaps, to bring out the symptoms produced by this, as a primary condition, than cite a case that I had about six months ago.

The patient was a maiden woman about thirty-eight years old. For a couple of years she complained of a burning, heavy pain in the left side, radiating into the thigh and back. It was relieved completely and almost immediately when lying down, and was relieved to a marked degree by sitting down. There was no soreness to pressure at any time, even when the pain was greatest. Pain was much increased by menstruation.

This patient was also obstinately constipated, but movement of the bowels did not produce any soreness or increase the pain, but straining at stool did increase the pain. She was operated on, and a large varicocele was found in the left ligament, caused, I think, in this case, by a myoma about the size of a hen's egg in the upper part of the ligament.

These are the usual symptoms found, and you will note that they do not indicate an active inflammatory condition. I would especially emphasize the burning character of the pain, its transmission into the back, its exaggeration when on the feet and at menstruation, and complete relief on lying down. In addition to these symptoms, the patient usually complains of tiring easily, and is disinclined to any activities. Endometritis always develops, sooner or later, and is manifested by a marked leucorrhea.

Diagnosis.—This must be made, in the majority of cases, by exclusion. The condition is rarely thought of as an entity, and the symptoms produced are always associated, in our minds, with some other pathological conditions in the pelvis. If these conditions are not found on examination we lose interest and relegate our patient to the neurotic class, which means, in these cases, that we are taking shelter behind the sin of ignorance or lack of interest.

This is a class of patients that really deserve our closest attention. They frequently come to us suffering severely and with a history that they have consulted various physicians without relief. A number of them have even been operated on, and, because some kink, pericolic membrane or misplacement was not found, the abdomen was closed, and the patient was sent on her way.

It is claimed by a few that this condition can be detected, from the vagina or rectum, as a worm-like, spongy mass, not tender, and disappearing on pressure. This I have never been able to do with sufficient assurance to make a positive diagnosis of varicocele of the broad ligament. I have, though, in a number of cases, recognized a soft mass from the rectum which was not tender, and which disappeared on lying down. I have, on very few occasions, been able to detect anything with the patient lying down that, to me, was sufficient to base a diagnosis of varicocele upon. I always examine the patient standing and again when lying down.

It really seems as though we should be able to more frequently recognize this condition by physical examination because this mass is of a fair size, in the marked cases, and, besides, a great many of these patients are thin, their muscles are toneless, and they suffer from a general prolapse of the abdominal viscera.

However, I have made it a rule that, when a patient comes to me suffering from the above symptoms and no physical findings can be detected in the pelvis, to account for them, to place her upon what I shall describe as a medical treatment. If this does not relieve her completely, or relieves her only temporarily while the treatment is being applied, I advise laparotomy, feeling reasonably sure that I am dealing with varicocele of the broad ligament. The best procedure in all these cases is always to have this condition in mind; and, by exclusion, all reasonable doubt can be removed.

Treatment.—The treatment falls naturally under two headings, medical and surgical. We can always obtain by palliative measures, at least, temporary relief, which should always be tried, and, especially in doubtful cases, as an aid to diagnosis. I have found that tampons, either plain or medicated, inserted well up in the posterior cul-de-sac; gymnastic exercises to build up the tone of the abdominal muscles; assumption of the knee-chest position at night; sleeping with the foot of the bed elevated; and hot douches have a beneficial effect upon the patient.

It must be remembered, however, that many of these patients are individuals whose resistance is far below par; but, in spite of this, the results, from a medical standpoint, are better in this class of cases than in any other, if it is possible to once get the patient thoroughly interested and to gain in weight. This can usually be done by forced feeding, plenty of fresh air and rest and freedom from heavy work. Medical treatment, in my hands, as a sole procedure has given very indifferent results, and I can safely say, with but few exceptions, was unsatisfactory.

Surgical treatment has been varied, and numerous operations have been advocated. Crossen and Sencert ligate at either end of the broad ligament and peritonize afterward; but this, according to Furniss, is very frequently followed by troublesome bleeding and post-operative hemorrhage. Some believe that to get results the greater part of the broad ligament and the ovary must be removed, but I would liken this procedure to amputation for varicose veins of the leg, or to castration for varicose veins of the cord.

Furniss claims good results by ligating the ovarian veins at the brim of the pelvis, either by a single or double ligature. This I would criticize as merely cutting off the principal avenue of escape of the blood from the broad ligament, and, in my opinion, it would tend to make the condition worse.

For some time now, and with fairly good results, I have followed the same technic here as in dealing with a varicose condition of the spermatic cord, viz., the dissecting out, ligating, and

cutting of the dilated veins, leaving sufficient of the good veins to return the blood from these parts. This I do by incising the anterior layer of the broad ligament along the upper border and turning it down. This is easily accomplished in most cases, and, if done with a piece of gauze while the ends of the ligament are held taut, very little hemorrhage occurs. The mass is now fully exposed, and its dilated veins (made so, if necessary, by a little pressure upon the ovarian or uterine veins) can be separated from one another if desired. A double ligature can now be placed on those that your judgment tells you are unusually dilated and unnecessary. I always cut the veins between the ligatures as the last step to prevent the blood from obstructing the field. The anterior layer is then stitched into place.

This procedure not only gives one a command of what is being done, but corrects the trouble at its source, and leaves the circulation as nature would have it.

Of course, in all cases where the varicocele is a secondary condition the causative factor must also be removed. This, in a very few cases, is sufficient; but in the vast majority of cases, where the veins have been greatly dilated, they do not resume their natural size again, and continue as a source of trouble.

LOCAL INFECTION IN RELATION TO PATHOLOGY IN THE CHEST AND ABDOMEN*

By Frederick W. Minty, M. D., F. A. C. S.
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It has been said that the most epoch-making advance in the science of medicine in the last twenty-five years, is that of discovering the relation of focal infection to diseases of organs remote from the site of the primary infection.

In discussing the relation of focal infection to diseases of the chest and abdomen, it is quite necessary to differentiate between those pathological conditions which are the result of direct migration of infective micro-organisms, as exemplified in cholecystitis subsequent to an attack of typhoid fever, and those conditions which are the result of infective micro-organisms being taken up in the blood stream from some distant focus and later deposited in the tissue of the involved organ in such a manner as to cause a typical pathology, which is entirely secondary to a hematogenous infection, as exemplified in tuberculosis of the renal parenchyma.

As in all such differentiations we find that it is frequently a practical impossibility to classify the etiology of disease with exactness. This is made more definite from the standpoint of the subject under discussion, because of the fact that similar pathological conditions may occur in the same organ from either of these etiological factors. As an example of this statement we wish to cite the following limited experiment regarding appendicitis in children. There is practically no question but that a very large percentage of cases of appendicitis in adult life are the direct result of either obstructive inflammatory changes in the appendiceal mucosa or a change in virulence of the normal intestinal bacteria, and it is quite probable that the matter of focal infection in the adult with relation to appendicitis is very largely a negative quantity. In contradistinction to this conclusion we would suggest that probably a very large percentage of the cases of acute appendicitis in children and young adult life are the direct result of primary focal infection of the faucial tonsils. As a reason for this suggestion, a number of years ago we worked out a series of fifty cases of acute appendicitis in children under twenty years of age in which cultures were taken from the mucosa of the affected appendix and also from the faucial tonsils, and in practically 94 per cent of the series the bacteriology of the culture was identical from both regions. While we recognize the fact that as small a series as this does not warrant any definite conclusion, yet we feel certain that the coincidence is of sufficient importance to warrant us in assuming the probability of acute appendicitis in children being most frequently the result of a primary focal infection in the tonsil tissue.

Another very interesting phenomenon is the acknowledged fact that a chronically infected appendix very frequently becomes a primary focus of infection, which may result in multiple arthritis, endocarditis, or any of the other systemic manifestations of general bacteremia.

The theory of Rosenow as to the change in virulence of certain forms of bacteria in focal infections and their tendency to cause certain specific lesions when modified in a definite way, has

*Presented before the Black Hills (S. D.) Medical Society, September 22, 1920.

not been entirely proven to its final conclusion; and yet under given conditions his findings seems to be quite generally accurate. Probably nowhere is this more clearly shown than in the manner of the effect of certain infectious organisms on the endocardium.

1. "Probably the most usual infectious organism in malignant endocarditis is the streptococcus viridens. The peculiarity of this organism is that it has only moderate virulence as compared with many other strains of streptococci. One of its peculiarities is, that it requires a high-oxygen tension for its growth, and this it finds as a surface growth in focal infection and in the blood stream in malignant endocarditis. Probably it is this peculiarity of this type of streptococcus, and the fact that the thrombus vegetations which it produces on the heart valves act as a good culture medium for it, that makes this disease so fatal. It finds on the heart valves a good secondary focus where it may grow, and it finds a rich oxygen content in the blood stream." The primary focus from which this attenuated streptococcus originated could easily be a very insignificant focus of infection with very little local disturbance.

While considering the matter of focal infection in relation to chest pathology, probably the most pronounced example of primary focal infection is that of old and, oftentimes, unrecognized tuberculous foci of the lung tissue. One can more readily understand the danger of unrecognized tuberculous lesions when we come to realize the large percentage of children having recognized tuberculous lesions in the lung and add to this the number of cases that do not come under observation or in which the lesion is not recognized upon examination.

2. In Vienna, Hamburger and Sluka, in their studies of the subject of tuberculosis in children, found a total of 40 per cent of children ranging in ages from one to fourteen years having definite tuberculosis lesions. These findings should certainly be of sufficient significance to warrant a very careful and complete chest examination in children suffering from indefinite septic conditions.

In consideration of the gall-bladder as a seat of focal infection irrespective of whether the original cholecystitis was the result of migration of bacteria from the intestinal tract or whether it was the result of a septic thrombosis of the terminal branches of the cystic artery, the infected gall-bladder becomes a source of secondary involvements of far-reaching importance. From this chronic infected gall-bladder, probably through migration of the micro-organisms whose virulence has been increased or attenuated during its incubatory life in the stagnant gall-bladder, a secondary cholangeitis of the cystic duct develops, which may extend to the ascending hepatic ducts throwing a constant stream of micro-organisms or their toxins into the general circulation through the portal circulation; or, through a secondary inflammation of the common duct, an acute or chronic pancreatitis may develop with its attendant pathology.

3. So-called migraine with a gall-bladder history, that form of bronchial asthma which is the result of gall-bladder pathology, occasional cases suffering from epileptiform seizures with attendant gall-bladder symptoms, which upon operation so frequently present a chronic cholecystitis with cholangeitis and oftentimes secondary cirrhosis of the liver, is the result of long-continued infection of the bile ducts. These cases, if seen early enough before the liver pathology becomes permanently established, show brilliant results from the removal of the primary focus, which in this case is the gall-bladder, with subsequent drainage of the bile ducts. We think that this line of reasoning has much the same bearing upon the question of cholecystectomy versus cholecystotomy that tonsillectomy has upon palliative treatment of infected tonsils.

In a brief paper of this nature, it is impossible to catalogue in detail all possibilities of focal infection in the organs of the chest and abdomen, and it has been our purpose, as briefly as possible, to call to your attention some of these more common examples and, if possible, stimulate a healthy discussion that shall result in our being more diligent in our search for the primary elements in systemic conditions, the etiology of which is more or less obscure, realizing that probably in a very large percentage of cases these conditions are the result of a very definite primary focus, which of necessity must be the determining factor in the ultimate cure of the diseased condition. We wish to emphasize particularly the frequent correlation of chronic infected tonsils and acute appendicitis in children and the very common syndrome of constitutional symptoms which have as their primary focus of infection either chronic appendicitis or chronic cholecystitis, or both, and urge that the large percentage of tuberculous foci in the lungs of children and young adults be constantly borne in mind in the search for primary foci of infection.

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AN ODE TO CALOMEL

The editor's equilibrium was very much disturbed the other day on reading in a daily paper an article by Dr. Evans, the man who advises us all as to our ills and what to do and what not to do. One of his latest communications is a sort of brief, "Putting Calomel on Trial." His first paragraph is very wise, in which he says the use of calomel by people on their own initiative is ill advised. We think they should read this article and mend their ways. He goes on from here to discuss the fact that some of the objections are given in a little book on cathartics, by Dr. Fantus, who stated that much misinformation regarding calomel had been given out, and that it was simply a relic of fifty years ago. It is quite true that for many years, in our early recollection of medicine, calomel was supposed to be a cholagogue, acting directly on the liver; but that belief has long since disappeared. We know now that calomel acts on mucous membranes—that it stirs up the avenues of elimination only by its irritating and juice-producing qualities, so that most people who take a dose of calomel have a soft or a liquid stool, particularly if they follow it up with the old-time customary dose of Epsom salts in the morning.

Then, too, this writer points out that calomel is likely to act as a poison. That is probably true in a very few instances; but in the way it is employed at the present time it is practically non-toxic. And what this same writer says about calomel being a mere purge is unjustifiable, and he forgets his own and the experience of others.

It is quite true, as he remarks, that calomel is employed by many physicians in a routine manner, and that is a fair criticism; yet Dr. Evans believes implicitly in the use of proper foods, and most of his communications give a list of foods that are supposed to regulate the gastro-intestinal tract, and yet they are given in a routine manner and without the same careful investigation that should be employed before anything of the kind is advised. For instance, he suggests that, in place of calomel, phenolphthalein be used. That, too, is very much used by laymen as well as the medical profession. Senna, which he suggests should be used in coffee, is one of the old-timers, senna leaves having been on earth for many years and have been used as laxatives and for drastic treatment. But why use senna, particularly in the unfortunate being who has a disturbed stomach and who, perhaps, has vomited and continues to vomit, because a clearing-out is needed? The mere suggestion of presenting such a patient with a cup of senna tea is not attractive, and in such instances a full dose of calomel given on the tongue, dry, will entirely relieve a protracted vomiting attack. Hence the editor goes back again to his praise of calomel, and in many instances he is willing to laud it to the skies and declare it one of the best remedies on earth.

The fact that people are in the habit of over-indulging, and become blockaded and then resort to calomel, is not a very good argument that calomel is in the discard. Many people over-eat and over-indulge, cramming their digestive systems full of undigestible stuff, both food and drink, and then take a dose of salts in the morning. Is there no difference between that condition of affairs and a dose of calomel judiciously prescribed? Of course, it is well to limit the quantity of foods to the majority of individuals, particularly those types that are prone to so-called biliousness or to blockades of their whole tract, but who is going to follow these directions? It is very much like the old saying of Raymond Hitchcock, who, when someone suggested that matrimony was an institution, said, "But who wants to live in an institution?" This applies to the man who does not always live right. He does not always take care of his foods properly, and he is over-indulgent. But this is no fault of calomel. It is the fault of the individual, — sometimes the fault of his training and sometimes the fault of his doctor.

How does it happen that in the South, and in

countries where malaria abounds, calomel and quinine are in very close relationship, and produce such wonderful relief in malarial subjects? Then, too, calomel, or some of the mercurial derivatives, are a sheet-anchor in certain forms of syphilis. Are you going to give up all this mercurial medication, and make the patients drink senna and sage tea, and put aside our old friend, calomel, to whom we respectfully dedicate this ode?

"NERVOUSNESS"

As this word covers a tremendous field, and yet is quite expressive of certain conditions, both of body and mind, and simply to start the subject for discussion, the editor has ventured to reproduce a letter recently written to a nervous woman; but it applies equally well to a nervous man, and the sex may be changed, in the course of the letter, to adapt itself to almost any condition that comes under the head of nervousness.

It may seem an easy matter to write a letter of advice to one who is "nervous," but one has to do this on the spur of the moment; then, too, there is much ground to cover, and always there exists the fear that what should be said in particular is not said. The introduction to this letter starts off something like this:

So far as I know, so far as I have been able to determine, and from what I have gleaned from other sources, you have no organic disease, either of your brain, your spinal cord, your heart, or your liver. Of course, it goes without saying, that the rest of your bodily organs are all right. But you have and have always had, although you may disclaim it or deny it, or perhaps have not noticed it, a nervous system which is not as it should be, that is, you have inherited a nervous instability. That means that your nervous system may have started out on the right track, but it got sidetracked when you were under pressure or stress, or in illness, and when it got started it carried out what it was destined for,—uncertainty in function, unreliability, and uncertainty in what it might lead you into. But it is not one that is diseased. It is simply disordered and has acquired some bad habits that make you introspective,—you think about yourself so much, and analyze your symptoms until you reach a point of hysteria or nervous excitement, and then you have other symptoms added which alarm and frighten you.

Now, of course, it goes without saying, too, that you have a very common form of nervous disorder, without going into it deeper. And this disorder is the kind that leads you into complaining ways and anxious moments, and disturbs not only you but everyone else. The result is that after your family and your friends, and your doctor, have seen you a few times they have made up their minds that there is nothing seriously wrong with you, only that you are a nervous woman, and that they can do nothing for you in a very definite way except to make you more comfortable, and, above all, reassure you that you have nothing serious to look forward to. That is why your nervous system, as well as other people's nervous systems, is on edge, and the only way out of this is by drilling and disciplining and educating your nervous system until it is under your control, and you not under its control. This, I realize, is a very easy way of getting around a situation, but nevertheless it is true. And if you once begin to appreciate it and become indifferent to your nervous symptom, you will get along much easier.

You ought to be, at your time of life, calm and mellow, but, instead of that, you are nervous and tired, easily exhausted, and not easily diverted. You are like one of the men in the "Three Wise Fools,"—they all got into a rut and there they stuck until some fortunate incident bobbed up that pushed them out, but only for a brief period; and the moment they had an opportunity, they slid back into their old rut. Can you imagine three old men like these "Three Wise Fools,"—going up to bed every night at ten-thirty, with a glass of hot water and an apple? All their other acts and conduct were up to this standard, and perhaps they have set a pace which other people in ruts follow. Perhaps, eventually, these various ruts which various people are in will lead to one common, larger rut, where they get together and talk things over, and really enjoy discussing their misfortunes and the life they lead, satisfied with inactivity, and dissatisfied when they are made to do something.

Consequently, when you go away to California or to China, or wherever you may decide, you are getting out of your rut. And remember that you are out of it, and don't permit yourself to slide back into it; and make the most of your experiences, and keep going. I venture to say that you are absolutely safe, and that you will live a long time. But if you stick in this rut you will be unhappy and so will others. So get out of it, stay out of it, and have a good time!

This is in the line of a lecture, perhaps, trying to explain why nervous people are nervous, and how nervous people can become better, and more companionable and enjoyable, if they will only change their viewpoint.

THE VOLUNTARY VENEREAL VICTIM

From a newspaper clipping which has just come to hand, based on the report of the American Social Hygiene Board, and remembering that this is an interdepartmental board, and really a Government bureau, there are a few appalling facts which we as physicians are obliged to face. Incidentally, too, it is a plea that must be presented to the Minnesota legislature to appropriate twelve thousand dollars or more for the fight against venereal diseases in Minnesota. Congress has appropriated, already, the same amount for Minnesota under the Chamberlain-Kahn Act, but, in order to realize the benefits of the Federal appropriation, the State must be prepared to appropriate an equal amount.

This report of the Government bureau shows that an average of 10,788 men and officers of the U. S. Army were absent from service each day of 1918 on account of venereal disease. The

report further places the total number of days lost in 1918 by men in the service, and because of their venereal disease, at the appalling figure of 5,937,710. Under the circumstances, does the world seem to be getting better, — or has it kept up with the statistician, and made his work a daily task from which he is never relieved, and probably he works every day of the year to keep up with the new cases that are developing all over the country?

Syphilis is a reportable disease in the state of Minnesota, and the reportable syphilis may be old or new. But in order to save the—shall we say—feelings of these unfortunate victims, the report may go in simply under a number without a name. But, as has been said before, the people who are reported by number are very apt to shift their physicians and they go from one to another and eventually are lost sight of. If that be the case, then the name should be reported. If they are in the hands of reputable men who insist upon regular attendance until a cure is practically effected, no fault is found by the State or the Government; but if they are found drifting around from pillar to post, leaving a bad record (both financial and venereal) behind them, they should be called and registered by their names.

The head of the Department of Venereal Disease in Minnesota evidently has a great deal of trouble in getting reports from physicians. The so-called patriotic physician decides to relieve his patient from as much embarrassment as possible, and incidentally thereby permits him to go around uncontrolled; and, incidentally, he is spreading his infection. It seems necessary, therefore, to request all physicians to bear the troubles of the head of the department in mind, and relieve him of some of his anxieties as well as assist him in keeping the tabulation of all venereal cases, knowing, as physicians do, that these will be held in the strictest confidence, which will not in any way be violated, and without embarrassment of any kind to the victims themselves.

DO STATE LAWS FUNCTION?

If the Northwestern Telephone Company can obtain the proposed increase in telephone rates now pending, and can do this under the present conditions of service known to every user of a telephone, then the great body of discontented men who are carrying on a dangerous propaganda against all government can well say, "The laws do not function."

For four or five years the telephone service has been so inexcusably bad, and is at the peak of badness to-day, that everyone knows it is kept in this condition either to save expense or to tire out the public with a view to obtaining a long-contemplated increase in rates. The last competitor of the Northwestern Telephone Company in Minnesota was long ago anesthetized, and is now dead, the two companies having been amalgamated.

The Northwestern Company comes into a court of equity with unclean hands, which no individual is permitted to do, that privilege being left to big corporations. It asks for an increase in rates upon the ground that the cost of service has increased, but no court in the land can ascertain the cost of such service without an exhaustive survey of the Company's entire history, which would require several years of time and millions of dollars of money.

Even in spite of extortion, the public would willingly accept a small increase, if the service were equal to what it was in the days of competition; but the granting of an increase in rates with a deliberately emasculated service, could be interpreted in no other way than to say our laws do not function.

THE SOO RAILWAY SURGICAL ASSOCIATION AND THE JOURNAL-LANCET.

This vigorous and interesting railway surgical organization paid The Journal-Lancet a high compliment when its secretary asked permission to propose to the Association that the paper become its official organ. The request was readily granted, because of the fact that the papers presented before the Association deal almost wholly with emergency surgery, or with such cases as the general practitioner must deal with in his daily work.

The resolution to this effect was unanimously adopted at the thirteenth annual meeting of the Association, held in Minneapolis last month.

This Association was organized thirteen years ago by the chief surgeon of the Minneapolis, St. Paul & Sault Ste. Marie Railway, commonly known as the "Soo Railway," and it has developed into a highly useful organization, not only to the railway, but to the public. From the beginning of the organization only members of the A. M. A. have been admitted to membership, and any indolent men who gained admission were soon weeded out, thus making its membership an earnest, wide-awake group of men; and this fact is evidenced in every annual meeting of the body.

CORRESPONDENCE

DR. CORBETT STILL ON THE STAFF OF THE MEDICAL SCHOOL OF THE UNIVERSITY OF MINNESOTA

To The Editor:

Please note the enclosed copy of a statement signed by Dr. J. F. Corbett, which will somewhat clear up the false impressions in regard to the Medical School which have gained credence in many quarters during the last few days.

Sincerely yours,

E. P. Lyon,
Dean.

DR. CORBETT'S STATEMENT

In correction of newspaper reports of interview with me, I desire to say:

1. That on July 1, 1919, I resigned from my full-time salaried position in the Medical School to devote myself to clinical work. I did not resign my rank as Associate Professor of Surgery.

2. That I still retain my title as Associate Professor of Surgery and expect to continue in the University clinical service at the Minneapolis General Hospital.

3. That the statement that my resignation of my former position was connected in any way with the Mayo affiliation is incorrect and misreported. I distinctly denied any such cause in my interview.

(Signed) J. F. Corbett.

NEWS ITEMS

Dr. G. A. Dahl, of Mankato, is doing postgraduate work in Chicago.

Dr. Mary K. McCoy, of Duluth, is in Europe. She spent the holidays in Rome.

The Academy of Clinical Medicine of Duluth opened its new building to the public last week.

Dr. Arthur E. Perley, of Worcester, Mass., has become associated with Dr. Charles E. Granger, of Rochester.

The discovery of a vaccine for yellow fever by Dr. Hideyo Noguchi at the Rockefeller Institute has been officially announced.

Dr. R. Reagan, of Garretson, S. D., has formed a partnership with Dr. Zetlitz, of Sioux Falls, S. D., and will soon move to that city.

Dr. Clyde W. Jump has received a commission in the medical corps of the regular army, and expects to be assigned to hospital service.

Dr. Scott Searles, formerly of Crookston, has opened offices in Minneapolis in 812 Pillsbury (now Besse) building, and will limit his work to radium therapy.

Dr. O. M. Sanderson, of Minneota, will spend several months in Chicago, taking a special course in eye, ear, nose and throat work.

Dr. M. S. Henderson, of Rochester, was elected president of the Central States Orthopedic Club at its recent meeting in Chicago.

Dr. Clarence G. Toland, formerly connected with the Mayo Clinic, was married last month to Miss Nina V. Rowland, at Los Angeles, Cal.

Dr. Dennis Sullivan, of Milbank, S. D., has been appointed captain in the regular army, and reported for duty at Fort Snelling last month.

Dr. J. F. Corbett's relation to the Medical School of the University of Minnesota is explained in a letter on another page of this issue.

The Grand Forks, N. D., District Medical Society will invite the Cass County (Fargo) Medical Society to hold a joint meeting at Grand Forks this winter.

Dr. Arthur P. Rooney, of Harlem, Mont., died last month after an operation. Dr. Rooney was a graduate of Northwestern, class of '97, and was 51 years of age.

Dr. C. M. Gould, who formerly practiced in Superior, Wis., and who served as health commissioner of the city for four years, died last month in Tuscon, Arizona.

Dr. Wm. B. Wright, Jr., formerly associated with Dr. Justus Matthews, of Minneapolis, is now located in Los Angeles, Calif. He is limiting his practice to diseases of the nose and throat.

Superior, Wis., has a new $40,000 isolation hospital, which, it is believed, will materially aid in the control of contagious diseases. The old hospital repelled people; the new one will attract them.

Dr. Robert H. Townsley, of Wagner, S. D., died last month at the age of 40. Dr. Townsley's death was caused by overwork during the influenza epidemic. He was a graduate of McGill, class of '03.

The Medical School of the University of Minnesota graduated a class of thirty-one students last month. The class was addressed by Dr. Charles P. Emerson, Dean of Medicine in the University of Indiana.

Dr. D. A. Baker has moved from Jordan, Mont., to Hardin, in the same state, where he becomes associated with his brother. Jordan is left without a physician, and none is "within speaking distance" of it.

Dr. Charles B. Miller, a pioneer physician of Montana, died last month at the age of 80. Dr. Miller practiced many years in Helena, and was twice elected to the state legislature. Dr. Miller owned the first automobile in Helena.

Dr. Henry F. Helmholz was appointed professor of surgery in the Medical School of the University last month. Dr. William Lerche, of St. Paul, was appointed associate professor of surgery, and Dr. Norman Keith was appointed assistant professor of medicine.

Dr. Florado H. Wellcome, of Minneapolis, who, after graduating from Rush in 1879, practiced for several years in Sleepy Eye and Granite Falls, died last week in Minneapolis at the age of 62. Dr. Wellcome abandoned medicine for banking, and became a man of large affairs.

The alumni of the College of Medicine of the University of Missouri will be pleased to learn that the college proposes to establish complete departments in every line of medical instruction and research. The Centennial Endowment Fund, now being raised, will furnish the means to do so.

Dr. W. J. Mayo, a member of the Board of Regents of the University of Minnesota, placed before the Board at its last meeting a plan for community hospitals throughout the state, working in conjunction with the Medical School of the University. A committee was appointed to consider the plan.

The Red River Valley Medical Society held its annual meeting at Crookston last month. Officers for the current year were elected as follows: President, Dr. R. L. Kirsch, Crookston; vice-president, Dr. A. S. Hoiland, Argyle; secretary-treasurer, Dr. H. M. Blegen; delegate, Dr. O. F. Mellby, Thief River Falls.

The Nicollet-LeSueur County Medical Society held its annual meeting in St. Peter last month, when the following were elected officers for 1920: President, Dr. W. W. Covell, St. Peter; vice-president, Dr. J. W. Daniels, St. Peter; secretary, Dr. D. W. McDougald, LeSueur; treasurer, Dr. J. E. LeClerc, LeSueur.

Dr. Conrad Jacobson, a graduate of Johns Hopkins, who has been an assistant professor of chemistry and bacteriology at the Armour Institute and a research assistant in pathology at the Chicago University, has been appointed associate professor of surgery in charge of the surgical research laboratory of the Medical School of the University of Minnesota.

Alpha Omega Alpha, the medical scholarship fraternity of the University of Minnesota, announces the election of the following members: Clarence M. Jackson (honorary), J. A. Myers, Ruth E. Boynton, David H. Johnson, Roger L. J. Kennedy, and Charles E. Merkert, all of whom are students in the Medical School.

The Minneapolis General Hospital has opened a class in anesthetics for giving instruction in this work to physicians, nurses, and dentists. As the work must be self-supporting, a fee is charged. The course includes all kinds of anesthetics, and will prepare its students to become specialists, for whom there is great need and demand.

The Ninth District War Loan organization announces that the prisoners in the Minnesota penitentiary spent almost $5,000 in the purchase of Thrift and Savings Stamps in 1920, adding in the next paragraph that a South Dakota physician has bought not less than five $5 Savings Stamps every month for the past three years. They constitute two loyal and industrious classes.

Dr. J. P. Schneider, of Minneapolis, presented a paper on "The Diagnosis of Pernicious Anemia" before the Southern Medical Association at Louisville, Ky., in November. This is the largest medical society in the country, except the A. M. A. Dr. Schneider says the hospitality of Southern medical men knows no bounds, not even those imposed by a late constitutional amendment.

The following surgeons from this section of the Northwest attended the annual meeting of the Western Surgical Association held in Los Angeles, Calif., last month: Dr. Fred F. Attix, Lewiston, Mont.; Dr. E. P. Quain, Bismarck, N. D.; Dr. M. B. Henderson, Rochester; Drs. W. H. Dennis, H. P. Ritchie, and A. Schwyzer, St. Paul; and Drs. A. E. Benjamin, A. T. Mann, and H. B. Sweetser, Minneapolis.

A large addition, to be called the Children's Pavilion, has been added to the Abbott Hospital of Minneapolis, at a cost of $200,000, the gift of the Mr. T. B. Janney, of Minneapolis. It is needless to say that every possible convenience for the children and their mothers, and the physicians and surgeons in charge, has been supplied. The new addition was opened for public inspection on December 22d.

The Soo Surgical Association met in Minneapolis last month and, after presenting an excellent program, elected officers for the current

year, as follows: President, Dr. George F. Thompson, Chicago, Ill.; vice-president, Dr. Pierre C. Pilon, Paynesville, Minn.; secretary-treasurer, Dr. John H. Rishmiller, Minneapolis. By a unanimous vote the Association made THE JOURNAL-LANCET its official organ.

Dr. Mabel Ulrich, of Minneapolis, has settled, apparently at least, the bitter controversy over her renomination by the Mayor as a member of the Board of Public Welfare. She resigned from the Board, stating that she had reached "the limit of the amount of insult and suspicion which any citizen may be expected to endure." THE JOURNAL-LANCET may make further editorial comment upon this subject in a subsequent issue.

Mr. Vilhjalmur Stefansson, anthropologist and arctic explorer, gave an exceptionally interesting talk on his observations and experiences among the Eskimos of Greenland, Iceland, and Alaska, at a meeting of the general staff of the Mayo Clinic, December 8. Mr. Stefansson discussed the freedom of the uncivilized Eskimo from disease and dental caries, the treatment of scurvy in the northern countries, the early development of Eskimo women, and other topics of general interest.

Dr. Edward C. Kendall, of the Mayo Foundation, has received notification from the secretary of the Board of Directors of the City Trusts of Philadelphia that he has been awarded the John Scott Medal and premium of $800 for his work on thyroxin. In 1816, John Scott, a chemist of Edinburgh, bequeathed $4,000 to the city of Philadelphia, the interest of which was "to be laid out in premiums to be distributed to ingenious men and women who make useful inventions . . ." It is also stipulated that "the premiums shall be awarded for useful inventions, which shall include any inventions that will be useful to mankind in the advancement of chemical, medical or any other science, or in the development of industry in any form; the test being that the invention is, in the judgment of the trustees, definitely accomplished and that it may add to the comfort, welfare, and happiness of mankind."

On Wednesday, December 8th, about fifty former medical officers gathered together in St. Paul to renew old acquaintances and exchange stories of their experiences during their service in the late war. At this meeting it was decided to have a general reunion of all the former medical officers of the Northwest in St. Paul on the evening of January 11, during Clinic Week in St. Paul. The following committee was appointed: Dr. T. J. Maloney, chairman; Dr. F. J. Savage, secretary; Dr. Charles Freeman, and Dr. Knox Bacon. This committee was directed to send out announcements and to look after the details of the coming good time. It was further decided that this should be an informal affair, giving everyone the opportunity of meeting the fellows he wants to see and to talk over the times that *were* times. It was further thought possible that a medical officers' society of the Northwest might be formed at this time. The committee looking for co-operation consulted Lieut. Col. Rutherford, surgeon at Fort Snelling, and received a pleasant surprise. Colonel Rutherford has invited all the medical officers to the Fort on Tuesday evening, January 11th, to participate in a real old army mess and get-together. From his description, there will be nothing left out. The committee is indebted to Colonel Bjornsted and Lieutenant Colonel Rutherford for throwing the Post wide open to the medical officers, and they can now all be assured that a real get-together of real fellows under real conditions will take place on January 11th.

PHYSICIANS LICENSED TO PRACTICE IN MINNESOTA

At the October (1920) Examination

BY EXAMINATION

Boothby, Walter M., Harvard, 1906, Rochester, Minn.

Cosgriff, James A., Northwestern, 1920, Minneapolis General Hospital.

Hartley, Everett C., Jr., U. of Minn., 1918, Carver, Minn.

Haskins, John LeRoy, U. of Minn., 1916, Minneapolis, 707 University Ave. S. E.

Irvine, George B., U. of Ill., 1920, Minneapolis General Hospital.

Jensen, Louis C., Northwestern, 1920, Minneapolis, 914 Elliot Ave.

Moss, Myer N., Jefferson, 1919, St. Paul, 641 Grand.

Ogden, Warner, Harvard, 1920, St. Paul, 546 Holly.

O'Leary, Paul A., Long Island Coll. Hosp., 1915, Rochester, Minn.

Wood, Thomas H., U. of Ill., 1909, Rochester, Minn.

BY RECIPROCITY

Donohue, Philip F., St. Louis U., 1920, St. Paul, 1481 Summit Ave.

Duiker, Henry, Rush, 1920, Hibbing, Minn.
Eisele, David C., U. of Mich., 1917, Coleraine, Minn.
Frost, Harry T., Northwestern, 1920, Crookston, Minn.
Good, Brooks D., Tulane, 1919, Biwabik, Minn.
Gumbiner, David A., Long Island Hospital Medical College, 1902, Rochester, Minn.
Halenbeck, Philip L., Rush, 1919, Crosby, Minn.
Hutterer, Edward G., Sioux City College of Medicine, 1907, Cold Springs, Minn.
Kline, Harry W., Hah. Chic., 1919, Anoka, Minn.
Kramer, Gabriel B., Baltimore Medical College, 1907, St. Paul, City Hospital.
Mattill, Peter M., Rush, 1919, Hibbing, Minn.
Osborne, Earl D., U. of Mich., 1919, Rochester, Minn.
Pierson, Claude M., Trinity, 1901, Ambrose, N. D.
Rundlett, David L., Tufts, 1901, Sioux Falls, S. D.
Shastid, Thomas H., U. of Vermont, 1888, Duluth, Minn.
Stevenson, Frank W., Rush, 1919, Minneapolis General Hospital.
Walker, Ralph E., U. of Mich., 1907, St. Paul, 1111 Lowry.
Wilson, Edmund W., U. of Iowa, 1896, Rolfe, Iowa.

HOSPITAL SUPERINTENDENT WANTED

A 25-bed hospital in a South Dakota town of 10,000 wants a superintendent. Address 104, care of this office.

PRACTICE FOR SALE

In eastern North Dakota, unopposed $6,000 practice in up-to-date town of 500; best farming section of state; good schools and churches. Collections good; railroad and county appointments transferable; moderate investment. Address 105, care of this office.

MINNEAPOLIS OFFICE FOR RENT

Space in the Physicians and Surgeons Building, Ninth and Nicollet; approximately 1,200 square feet. Will rent whole or part at low rental. Apply to Custodian of building, room 224.

PHYSICIAN WANTED

In a town of two hundred population. Excellent territory. Nearest doctor seven miles. Scandinavian preferred. Address Clay County State Bank, Hitterdal, Minn.

PRACTICE FOR SALE

Am leaving a $10,000 practice in richest farming section of Southern Minnesota to locate in the city. Unopposed; collections, 95 per cent. House and office for sale on easy terms. Deal must be completed in a few weeks. Address No. 101, care of this office.

LOCATION WANTED

By a competent physician with fourteen years' experience in general and surgical practice, and long postgraduate courses in surgery. Hospital town preferred. Best of references given and expected. Will make moderate investment if required. Address 103, care of this office.

POSITION AS LOCUM TENENS WANTED

A middle-aged physician is at liberty to do substitute work for from one to four months in city or country. Can do all general work and can give the best of references. Address 423, care of this office.

PHYSICIAN WANTED

In a Minnesota village of 500, thirty miles from the Twin Cities; nearest competition twelve miles. Four other towns are within the territory that do not have a doctor. Good roads and good collections. Scandinavian locality. Address 421, care of this office.

SPLENDID OPENING FOR A PHYSICIAN

A Minnesota village of 1,000 inhabitants wants a young or middle-aged physician to locate there. It is a comparatively new country, but is a territory of great fertility. The village has a splendid new school building, water-works, electric lights, bank, two garages, good stores, etc. The woodenware factory employs 220 hands, and as many more work in the woods nearby; and the company will give a new physician its undivided support. Address 424, care of this office.

POSITION WANTED

Position on salary or as locum tenens, with or without view to purchase practice. Am licensed in three states, and have done postgraduate work in Tulane and Chicago Polyclinic. Good general surgeon and in general practice. Best of references. Address 426, care of this office.

PUBLISHER'S DEPARTMENT

HUNT SUNDRIES CO., INC.

This company was organized to give physicians and surgeons prompt and efficient service in their orders for hospital supplies and surgical instruments at the lowest reasonable prices, and it also acts as Northwestern Agents of the Frank S. Betz Co., whose line of hospital and surgical goods, either manufactured by themselves or imported, is a very large one.

Their Twin City salesroom is located at 706 First Ave. North, Minneapolis, to which local and out-of-town physicians will be welcome and given full information, whether the visitor desires to purchase anything or simply to become informed on goods in this line.

THE BEEBE LABORATORIES OF ST. PAUL

The Beebe Laboratories are calling the attention of physicians to their respiratory vaccine, designated, for convenience, as Beebe Vaccine No. 30. It is both a preventive and a cure of the colds and respiratory infections now so prevalent and so distressing. This vaccine is also an immunizing agent against the more serious diseases that follow the diseases above named.

These new vaccines of the Beebe Laboratories are too important not to be known by every physician; in fact, vaccines are gaining a recognition in modern medicine that is full of promise, and they should be familiar to all practitioners. The Beebe Laboratories are worth visiting or, in lieu of a visit, are worth corresponding with.

H. A. METZ LABORATORIES, INC.

When the German supply of Salvarsan and Neosalvarsan failed to come to this country, the Metz Co. of New York supplied these products made by them in this country by the exact German methods which had not before been used in America.

They now continue to make these products and market them under their scientific names, and they guarantee such products to be scientifically accurate, especially that they are practically free from toxicity and that they are readily soluble for easy administrations.

The Metz products are sold by all pharmacists, or can be had direct from the Laboratories at 122 Hudson St., New York.

LAVORIS CHEMICAL COMPANY

Lavoris is a simple zinc chloride antiseptic, the constituents of which are given on every container. It has been one of the "best sellers" of the day, and for a reason: it combines in an elegant manner drugs of well-recognized therapeutic value, long in use by physicians, singly or in various combinations, but now so combined as to produce results sought in the almost daily practice of every physician and dentist.

Its advertising in medical and drug journals has never contained false statements, not even exaggerated ones; therefore physicians have been readily induced to try it, and one trial gives it a favorable reception and, generally, permanent adoption.

The Lavoris Chemical Co. (Minneapolis, Minn.) will be glad to send a sample bottle and literature to any physician sending his name to the Company.

SCHOOL FOR BACKWARD AND NERVOUS CHILDREN

The Baker-Bartholomew School for nervous and backward children was opened in Minneapolis on September 1st in affiliation with the Minneapolis Sanitarium, and with Dr. W. A. Jones and Dr. Bruce W. Jarvis as medical advisers.

The response to the announcement was immediate and showed the urgent need of such an institution.

A private school of this kind cannot, of course, at the opening accommodate many pupils, but it can give the best of instruction and care, and the Baker-Bartholomew school is doing all of this.

The school is in excellent hands, and there can be no doubt of its present and future usefulness.

THE SWEDISH HOSPITAL

The Swedish Hospital is one of a small group of large hospitals in Minneapolis that have been so conducted as to give them a high standing in hospital circles throughout the country and to serve the public better than the public has ever known or, perhaps, ever will know. The Swedish Hospital especially appeals to the northwestern public and medical profession as worthy of the highest commendation from both. The building is large and is located almost within a fine park which belongs to it and is held for future structures, the staff is an able one, and the large body of nurses and other employes are ably directed by Asbury's acting superintendent, Mr. William Mills, who was formerly assistant to Mr. G. W. Olson, recently resigned.

The hospital now has a supply of radium sufficient to meet the demand in practically all cases, and very moderate fees are charged for treatments with it.

The clinical laboratories of the hospital are conducted by Dr. Chas. R. Drake, an able pathologist and general laboratory man.

BOLSHEVISM AND DYSPEPSIA

Early in September, an anarchist, with hate in his heart for his fellow kind, drove down Wall Street in an old wagon. Ten minutes later a bomb set by a time clock, inside the wagon, exploded with terrific force, killing 37 men and women pedestrians in the street.

Aside from a few pieces of wood and strips of metal, the only trace of the wagon and its contents found after the explosion was a bottle of dyspepsia pills, which the driver had evidently been taking to relieve him of indigestion.

By many pathologists and diagnosticians, anarchism and bolshevism are considered just a militant form of dyspepsia—here we have the tragic proof of it. When the gastric processes rebel, the heart sours and the love corpuscle atrophies.

To dyspepsia we unquestionably owe a large part of the world's unrest—economic, political and social. The thing is to correct it and make folks happy again. For this many agents have been tried, but none, physicians agree, have proved so efficacious and beneficial as Peptenzyme, the powerful digestant. Thousands of physicians attest to this—their records show it.

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We stake our reputation on Peptenzyme as a digestant. You may safely do the same.—*The Medical Pocket*, published by Reed & Carnick.

GONOCOCCUS GLYCEROL-VACCINE

The Lederle Antitoxin Laboratories, at 515 Fifth Avenue, New York City, make very interesting and very important claims for their Gonococcus Glycerol-Vaccine, which are of special interest to many special and to all general practitioners. They assert (1) that such vaccine will not deteriorate, (2) that it is free from autolytic products, and (3) that even in large doses it will not produce toxic reactions.

Such a vaccine is very useful, and as it comes from a manufacturer of high standing, we do not believe the claims are exaggerated, and, therefore, this vaccine should be welcomed by the profession when dealing with cases of chronic gonorrheal infections, gonorrheal rheumatism, epididymitis, prostatitis, and posterior urethritis.

A NEW GONOCIDE

The flavines are attracting attention in this country, after a year or two of usage abroad. Derivative salts from anilin, they are said to be about twenty times more powerful than mercury bichloride while yet comparatively bland as regards any living tissues with which their solutions come in contact; phagocytosis is not retarded; and they are accredited with a penetrating power not common to germicides which, because escharotic, form a pellicle or wall behind which infectious processes go on convertly.

Of these agents Acriflavine has been used mostly against infected wounds as a wet gauze dressing or packing, and also against gonorrhea. It appears to be very effective as a gonocide, especially in cases presenting within three or four days after the appearance of the discharge. Some use it by injection in 1:1500 (physiologic salt) solution or weaker, while others claim best results from irrigation with 1:4000 solution or weaker. In many cases the agent acts almost as a specific.

Both salts (the other being Proflavine) are being supplied by The Abbott Laboratories, Chicago, in powder form for making solutions. If desired, a 1:1000 stock solution may be made up and diluted for whatever strength is needed. A booklet of working data may be had by addressing this firm.

GRAY'S GLYCERINE TONIC COMP.

Many changes have been made in the practice of medicine within the past third or half century, and the drug iconoclast has left few of the old-time remedies unscathed by his pen and tongue (sometimes a serpent's tongue); but where is the practitioner today who does not prescribe a tonic in suitable cases, which means a large percentage of all cases?

If all the conditions calling for tonics were listed and classified, we venture to say the number of therapeutic agents indicated would be comparatively small, and that most of them were known to and used by the older physicians of the present and one past generation, which, after all, is a brief period. And we venture further to say that some of the leading therapeutic agents, in use today, and of recognized value as general tonics, would be found in Gray's Glycerine Tonic Comp., first given to the profession and used by himself for many years by Dr. Gray, a recognized authority of the past generation.

It is well to cling to the old until new is proven superior.

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Every physician knows that a fearful mortality follows the older method of expectant treatment of pneumonia. What physician has not felt the futility of merely waiting until the alloted time to see if the patient was or was not strong enough to live through the ordeal. There is little need to quote statistics. Some physicians are coming to realize that there is now available a treatment which tells a different story. Theoretically, the ideal therapeutic agent would seem to be one which will act promptly and positively. It must stimulate proteolysis of the pneumonic exudate by its influence on the ferment-antiferment balance of the body and it should incite or increase antibody concentration and mobilization. It should, of course, be safe and convenient to use.

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THE MENOPAUSE

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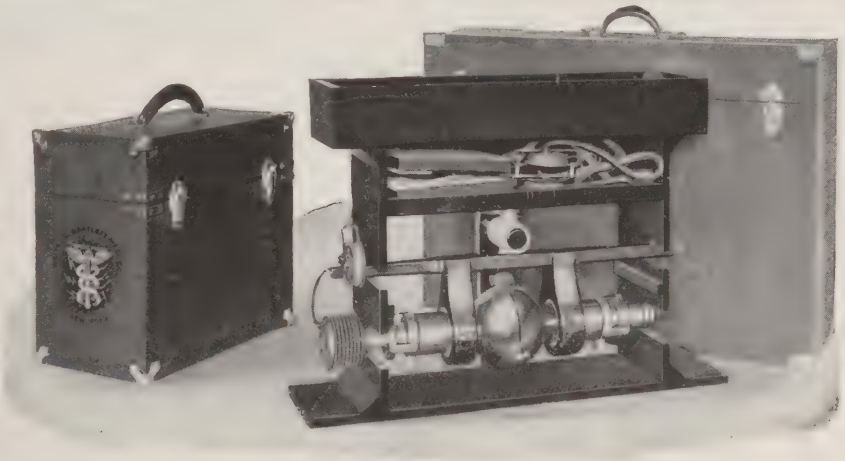
Every hospital has a personality, and that of the average hospital, in public eyes at least, is not altogether enticing, for this imaginary hospital is a place in which the unfortunate patient is placed to undergo the fortunes of *scientific* treatment. This hospital is far removed from the home. It is the personification of coldness on the part of both physicians and attendants —the antithesis of home; yet it is a necessary evil—so the public thinks.

But there is another kind of hospital, which has, as the French say, a *tièş personnalité*. It imparts for the entering patient an assurance of safety, of tender care,— of all that science can do and of all that deeply interested, faithful, smiling attendants can contribute to one common end, namely, comfort and a speedy return to health for every patient.

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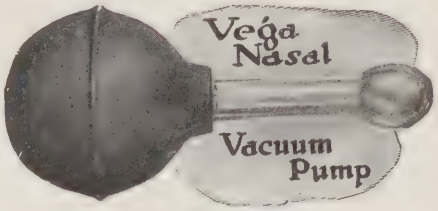
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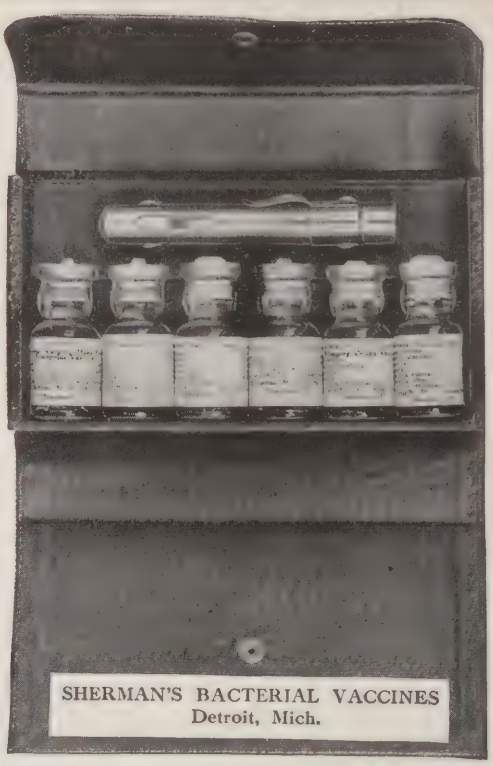
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RENAL DISEASE FROM THE MEDICAL STANDPOINT, WITH PARTICULAR REFERENCE TO CLASSIFICATION AND TREATMENT*

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The various lesions of the kidneys have always elicited great interest in the profession on account of their great frequency, but our conceptions of individual cases have oftentimes been greatly altered by a wholly unexpected outcome. And so, cases apparently favorable when first seen rapidly have gone on to unfavorable resolution; on the other hand, cases correspondingly unfavorable prognostically have often been very amenable to treatment. The prognosis in renal lesions is very uncertain, and anything which will clarify our understanding is of value. In this way certain investigators have done an immense service in the last few years: notably Cushny, with his modern theory of urinary excretion; Vollhard and Fahr, by their masterly classification of renal pathology; Widal, Janeway, Stengel, Christian, and others, with their painstaking work in developing a clinical classification applicable to every-day work and therapeutic principles fundamental to an efficient course of treatment.

Considering the physiology of urinary function, I wish to call to mind the histology and physiology of the urinary tubules and glomeruli. The capillaries are found in the glomerulus, the blood being brought there by the afferent vessels and removed by the efferent vessels, to again capillarize around the tubules. Cushny estimates that the total blood volume of the body passes through the kidneys every five minutes. Around the glomerular tufts we have the cup-shaped capsules which collect the transfused urine, to be carried by the tubules through their various divisions,—the proximal convolutions, the loop of Henle, the distal convolutions, and finally the collecting tubules. Bowman and Haidenhain's theory of urinary secretion based on glomerular filtration of the watery and salt portions, and the tubular cell function of adding the other solids by cellular vital activity, is no longer tenable, and has been generally supplanted by Cushny's so-called "modern theory." The double capillarization is the theoretic foundation and the clue to the whole scheme. It is his belief that the urine permeates through the capsule by osmotic action and blood-pressure, not only in its watery portion, but in its solid constituents as well, the colloids restricting filtration in proportion to their concentration in the blood. The solids again are in part re-absorbed by the tubules, in about the percentage found in Locke's solution, to concentrate the urine to the extent in which it is normally found. Certain substances are wholly re-absorbed so long as they do not exceed certain limits, as, for example, sugar; and others are wholly rejected, as, for example, urea and the sulphates. These substances which are reabsorbed by the tubules are called "threshold substances," and those which are rejected are called

*Presented before the Interurban Academy of Medicine, Duluth, Minn., May 18, 1920.

	62 liters plasma contain		62 liters filtrate contain in all	58 liters reabsorbed fluid contain		1 liter urine contain	
	Per cent	Total		Per cent	Total	Per cent	Total
Water	92.	621.	621.		611.	95.	950. c. c.
Colloids	8.	5360. Gr.					
Dextrose	0.1	67. Gr.	67. Gr.	0.11	67. Gr.		
Uric acid	0.002	1.3 "	1.3 "	0.0013	0.8 "	0.05	0.5 Gr.
Sodium	0.3	200. "	200. "	0.32	196. "	0.35	3.5 "
Potassium	0.02	13.3 "	13.3 "	0.019	11.8 "	0.15	1.5 "
Chloride	0.37	248. "	248. "	0.40	242. "	0.6	6.0 "
Urea	0.03	20. "	20. "			2.0	20. "
Sulphate	0.003	1.8 "	1.8 "			0.18	1.8 "

"non-threshold" bodies. If the threshold substances are in excessive amounts, the excess is rejected and passed off in the urine. The most characteristic threshold substance we have is sugar, which is totally re-absorbed by the tubules, provided the blood-concentration does not exceed .180 (50 per cent above the usual maximal normal limit). Urea and the sulphates, on the other hand, are not re-absorbed at all, and by estimating the concentration of the urea in the urine Cushny was able to ascertain the amount of plasma which had to filter through the glomeruli in order to effect this concentration. In this way he found that the concentration of urea in the normal urine was sixty times greater than the concentration of urea in the blood. He, therefore, concluded that the amount of deproteinized plasma which must transfuse through the capsules must be sixty times as great as the normal amount of urine which is daily passed, estimating the latter at about 1 liter. In other words, he concluded that 60 liters of plasma were normally filtered through the capsules, of which 59 liters were re-absorbed. This seems to be an enormous amount, but is not so great, as it has been estimated, that each tubule in the kidney would not have to absorb more than .014 c.c. of fluid per hour. This theory works well in its clinical adaptations, and leaves very few loopholes for contradiction.

The following diagram from Cushny's book shows the degree of concentration of the various urinary constituents in the various fluids and their ultimate distribution. A little study will aid in elucidating the context.

In disease, kidney function is affected by the degree of disfunction of the glomeruli or the tubules, or both. As a basic principle, any affection which allows filtration through the glomeruli and the capsules does not affect the circulatory system otherwise. As soon as filtration, however, is interfered with, the work of the glomeruli can only be increased by increasing the blood-pressure, since the normal pressure and osmosis are no longer sufficient. If filtration is then insufficient, even with increased blood-pressure, we have symptoms of retention, as uremia, and eventually death. Some of the chief alterations in the urinary findings can be interpreted functionally as follows: The polyuria in diabetes mellitus is caused by the fact that the sugar in the urine delays tubular absorption through its increased osmotic pressure. Albuminuria occurs when the glomeruli or the capsule of Bowman, through some solution in their continuity, allow the plasma colloids to pass through with the filtrates. In diabetes insipidus the cause is probably central in origin, and is analogous to the puncture polyuria of Claude Bernard and Roussy, the only difference being that in the puncture of Claude Bernard we do not have chloride retention as we do in diabetes insipidus. However, puncture polyuria is practically momentary, and, if punctures could be repeated frequently, it is reasonable to assume that the chlorides would be deficient in the urinary secretion. The polyuria so frequently found in chronic nephritis is due to the high blood-pressure causing rapid filtration and a rapid passage of the filtrate through the tubules limiting the time and the amount of absorption and, on account of secondary tubule degeneration. The theocine derivatives, such as the caffein preparations and diuretin, act possibly in two ways: by increasing the pressure in the glomeruli and by increasing the osmotic pressure in the tubules on account of

their being non-threshold bodies. Digitalis and pituitrin, of course, act only on the circulation.

The work of Volhard and Fahr in classifying the nephropathies has been equally epoch-making. Every clinician knows the inability to classify given cases as true parenchymatous, interstitial, etc., because there are innumerable instances which show features entirely out of harmony with our understanding of the class of cases as described in the older text-books. Volhard and Fahr have classified the nephropathies as follows, and a perusal of their monumental work impresses one with its sanity and simplicity. They are almost unanimously accepted, with only slight deviations, which I shall consider later. Slight alterations have been made in the classification for clarity.

A—Nephroses:
1. Nephroses (simple)
2. Nephroses (special)

B—Nephritides:
1. Diffuse glomerulonephritis
   - (a) Acute
   - (b) Subchronic
   - (c) Terminal
2. Focal nephritis
   - (a) Focal glomerulonephritis
   - (b) Interstitial nephritis
   - (c) Embolic focal nephritis

Arterio-scleroses:
1. Benign arteriosclerotic
2. Combination form

Pathologists may differ as to Volhard and Fahr's interpretation and split hairs over the classification, but, clinically, we have found it highly adaptable.

THE NEPHROSES

Their most valuable contribution to the nomenclature is their conception of the nephroses. As a type, only the simple nephroses need be considered. The special types are those found in bichloride of mercury poisoning, diabetes, and in amyloid disease, but they do not differ materially clinically from the simple type, except etiologically. Amyloid disease does not differ from the ordinary nephroses, except in the formation of amyloid itself. In the necrotic form the process is fulminating, as the name implies.

Of 55 cases of simple nephrosis, Volhard and Fahr gave as etiological factors, phosphorus, arsenic, mercury, coal-tar products, colon-bacillus infection, tuberculosis, syphilis, streptostaphylococci and pneumococci, diphtheria, pregnancy, and malignant tumors. This is an exceedingly wide range of causative factors, and is rather indicative that numerous factors may bring about the degenerative changes characteristic of a nephrosis.

Pathologically, there are four stages: (1) cloudy swelling; (2) the true degenerative changes; (3) interstitial changes; (4) contraction. The alterations are distinctly degenerative and not inflammatory, as in the nephritides, and the histologic changes affect the cells of the capsule and the tubules, leaving the glomerular tufts themselves intact. The vessels in the interstices are sometimes affected later through reflex causes. Nephrosis is, therefore, spoken of as tubular nephritis by some writers, for example, Schlayer, etc. The glomeruli not being involved, there is no interference with filtration, and there is no need for compensatory hypertension, and the blood level for the nitrogen retention products is normal. In mild cases of nephrosis we have little more than an albuminuria, as is often seen in the course of febrile cases. In the more severe and chronic cases we have evidences which are typical. The chronic cases are prone to relapse, and exposure to cold and moisture often precipitate the exacerbation of symptoms. Knowing the pathology and the pathological function, the symptoms are easily understood. Edema is almost invariably present, and frequently is very marked. At times, however, we only have salivation, tearing, and parotid or lid swelling. Ascites is not uncommon, and in chronic cases is usually opalescent (pseudochylous), due to a globulin lipoid, and the ascitic fluid is of low specific gravity and poor in proteins, but has a normal chloride level. The urine is dark, of high specific gravity, decomposes quickly, and contains numerous urates. The albumin is large in amount,—oftentimes as high as 2, 3 and 4 per cent. The casts are usually correspondingly numerous, but blood cells are absent. This latter is a particularly striking phenomenon. The urine is scanty because the blood is increased in viscosity from the hydremic condition of the tissues. Salt retention is also noted. It is thought that the ascites and salt retention are due to the changes in the cells of the capillaries or the endothelial lining of the serous cavities, rather than from direct renal causes, on the assumption that the same toxin causes both. It may also be due to lessened osmotic pressure in the blood, due to diminished colloids, as a result of the albuminuria. The ascitic fluid being isotonic in its salt

content, permits of less being passed by the kidneys, so that the salt retention is not due to any fault in the filtration through the capsules of Bowman. The Mosenthal test is negative, and the blood picture shows the red-blood count to be normal on account of the increased viscosity of the blood. The blood proteins are diminished in amount. The serum may be pseudochylous, similar in appearance to the pseudochylous ascites. Another distinctive feature is the absence of anemia. Uremia is absent, but convulsions may occur from cerebral edema, but a differential diagnostic feature is the fact that we have a normal pressure and no increase in nitrogen-retention products, and we obtain relief by the use of a proper diet, with the exclusion of salt. The skin is pale, and is in rather striking contrast to the blood findings. Diarrhea occurs at times; anorexia is marked. As stated before, there is no hypertension. There are no evidences of albuminuric retinitis. These cases in their course are subject to remissions, but relapses are of frequent occurrence when the terminal stage and death do not intervene.

In the necrotic form we sometimes have hypertension, as in bichloride of mercury poisoning, due to the anuria. In every case of death that occurred in Volhard and Fahr's series, it was found to be due to a pneumococcic peritonitis, the reason for which, however, they do not give.

As a classic case of chronic nephrosis which we have had in our practice, I wish to give this brief history:

The patient was a man, 52 years of age, who had always been in good health. While on a hunting trip in the north country he was subjected to inclement weather and exposure, and became wet. He went home, and promptly became seriously ill. The most striking symptoms were dyspnea on exertion, marked edema in the extremities and face, with the prompt appearance of a dropsical collection in the abdomen. The urinary examination showed a large amount of albumin and numerous casts, but no blood cells. The patient came to Duluth and was under our observation subsequently. During that time his blood-pressure was *always normal,* the albumin in the urine was found to be 1½ per cent and casts were exceedingly numerous. The edema and the dropsy were exceedingly intractable, and from the history we found that he had been tapped twice previously at home, each time the physicians obtaining an opalescent fluid, milky in appearance. While under our care we treated the patient with a restricted dietary, with no salt and rather vigorously with diuretin, but at no time were we able to get a marked reduction in the collection of fluid in his tissues. The albuminuria and the cylindruria also persisted without any alterations. The red blood count was a trifle over 5,000,000, and the hemoglobin was 90 per cent. The blood Wassermann was four plus.

The patient went along this way until suddenly he developed acute peritonitic symptoms in the abdomen, which at first suggested to us an acute abdominal condition followed by a peritonitis. Operation was inadvisable on account of the exceedingly poor condition of the patient. The patient died within twenty-four hours, and an autopsy was obtained. A striking feature was the paucity of gross pathological findings. On opening the abdomen we got a very large amount of milky fluid. The kidneys were rather strikingly good in appearance, and did not in any way suggest the gross findings associated with a chronic glomerular nephritis. Microscopic section showed marked tubular degeneration in the kidney substance, but the size, contour, color, en grosse, were practically normal, except for a partial confluence of medulla and cortex.

This case is illustrative of what Volhard and Fahr classified as their chronic nephrosis, and its points of differentiation from the true glomerular nephritis are clinically evident.

The intermediate cases, between those which we find in febrile conditions and those aggravated chronic cases, such as I have described, are represented by a large class which we often encounter in practice, and may be represented by the following citation:

A school teacher, just recently convalescent from an acute tonsilitis, came in with some edema of the ankles, and a little swelling of the face. The blood picture was normal. The urine showed albumin and a few casts. No blood cells were evident. The patient was hospitalized, and was dieted properly, with a prompt subsidence of the edema and the albumin and casts. Tonsillectomy was then resorted to, and for three or four days we again had a re-appearance of albumin, with a few casts, but no edema. Bed rest with diet again effected a symptomatic cure, and the patient was permitted to go home, and reports by mail, with examination of urine, during the last two months, show no return of symptoms, subjective or objective, according to the family physician.

THE NEPHRITIDES

The diffuse nephritides are classified as acute, subchronic, and terminal glomerulonephritis, the latter corresponding to the secondary contracted kidney or the condition that has clinically been known as "chronic interstitial nephritis."

In the acute stage we have glomerular swelling with cellular proliferation. The tubules are degenerated, but only secondarily, because the glomerular vessels are affected, and so indirectly the tubular distribution. Wherever the glomeruli are diseased the capsule is also affected immediately underneath. On account of this tubular involvement in the capsular portion, albuminuria is noted, and the glomerular disfunction reveals itself in the presence of hematuria, or at least, microscopic red blood cells. On account of the insufficiency of the afferent blood supply, hyper-

tension usually results, but to begin with, moderate in degree. If the hypertension is not sufficient to maintain function, the nitrogen retention products increase in the blood. P. S. P. acts like urea as a non-threshold substance in the tubules, and is resultantly decreased in its excretory percentage. The process in the acute form may recede, became chronic, or cause death.

In the subchronic type the hypertension keeps up the function for sometime, and the nitrogen-retention values remain normal, as well as the P. S. P. output. With the increased blood pressure filtration is accelerated. In this stage a chronic nephrosis may be simulated except for the blood picture and hypertension.

In the end stages of the glomerulonephritides we have a balance for a time on account of the increased vascular tension. This persists until concentration of urine is no longer possible on account of the glomerular disease, and we have a termination either with uremia or cardiac defeat.

In any of these chronic stages we may have acute glomerular relapses, which are usually manifested by albuminuria and red blood cells. Retinitis appears only in the later subchronic or in the terminal stage.

Etiologically, in considering the nephritides, the cocci are the chief offenders, being the cause of 75 per cent of Volhard and Fahr's cases. The other causes are lead, alcohol, pregnancy, malaria and unknown agents.

The symptoms in the various stages of chronic glomerulonephritis are in accordance with the pathology. In the acute stage we have hypertension (moderate in degree), with varying edema, slight anemia, albuminuria, red blood cells, casts, diminished amount of urine, and water and chloride retention, or nitrogen retention, according to the comparative involvement of tubules and glomeruli. When convulsions do occur they are due to cerebral edema or uremia. The characteristic cases of this kind are those which we frequently find following scarlet fever, in which, two or three weeks after the subsidence of the initial symptoms, the patient develops signs of anemia, shortness of breath, pallor, albumin in the urine, casts, blood cells, and a moderate elevation in the blood pressure. As is well known, these cases, if mild, may recede, but they oftentimes go on to the chronic stage if death does not supervene.

In the subchronic cases we have a well-functioning glomerular type on account of the hypertension restoring the filtration equilibrium temporarily. As a result, our symptoms may resemble a chronic nephrosis plus hypertension, with at times nitrogen retention in moderate degree. The cases that have been popularly known as chronic parenchymatous nephritis fall into this subchronic group of chronic glomerulonephritis, into the chronic nephrosis class, or a mixed type of the two. It must be remembered, however, that in the subchronic glomerulonephritis, although we do often have edema and salt retention, it is not an invariable rule.

As an example of this type resembling nephrosis, I might cite a case:

A male, aged 39, who had always used alcohol to excess, and gave a history of frequent tonsillitis. He came in complaining of soreness in the precordium with marked nocturia, swollen ankles, heavy feeling after eating, and rather universal headaches. On examination we found that his blood-pressure was 160 and 100. The urine showed a marked amount of albumin and numerous casts, with a few blood cells. Gastric fluoroscopy was entirely negative. Edema was plainly manifest in the extremities and in the face, with ascites in the abdominal cavity. His blood showed a marked reduction in hemoglobin and red blood cells. With the institution of treatment this case gradually subsided so that he was quite comfortable, but he had a persistence of his hypertension and the symptoms attendant upon it, as soreness in the precordium and the headache. Otherwise he felt well symptomatically.

As these cases of chronic glomerulonephritis go on to the terminal stage, we have the so-called "chronic interstitial" form or "secondary contracted kidneys." In these cases the glomeruli have undergone so much alteration, and the filtration of solids is so seriously interfered with, that the tubules play only a secondary part in the formation of symptoms. In these cases the symptoms are practically wholly due to glomerular dysfunction, and we find extreme hypertensión, nitrogen retention, little albumin, few casts, cardiac hypertrophy, cardiac edema (or renal at times if we have a mixed form of nephritis), polyuria, a positive Mosenthal, reduction in the P. S. P. output, anemia, retinitis, cerebral hemorrhages or hemorrhages elsewhere, and finally uremia, coma and death.

It is hardly necessary to cite an example of a case of this type, as they are the type most commonly encountered in practice, and the symptomatology is particularly striking. In the early stages it is these cases which give great difficulty in the differential diagnosis between this condition and the essential or benign form of hypertension. This is so well known, and the symptomatology

is so evident, that it will not be necessary to go into further detail.

These cases may follow the subchronic form, may develop after an acute attack, or may come on insidiously without a definite history of pre-existing trouble. The latter possibility leads some clinicians to doubt the development of chronic glomerulonephritis from an old acute attack, but clinical studies of old acute cases over a long period convince me of its frequent occurrence.

It is of course possible to have a mixed form of renal disease, in which we have not only a nephrosis but a nephritis as well. In these cases we have the usual evidences of tubular disease plus hypertension, and a great many cases of so-called chronic parenchymatous nephritis are of this class.

In focal nephritis the glomeruli and tubules are only involved in part, and there are enough normal units left to maintain the function of elimination. The only evidences are those due to inflammatory reaction, as red blood cells in the urine, fever, bacteriuria, moderate albumin, and casts. There is no nitrogen retention nor salt or water retention, and the renal functional tests are normal. Dick and Dick have invariably found bacterial organisms in the urine of these cases when acute, and the work is significant. The hematuria and absence of salt and water retention differentiate these cases from the nephroses, and the absence of hypertension from the diffuse glomerulonephritides.

THE ARTERIOSCLEROSES

The arteriosclerotic kidney may be benign or malignant. The benign cases are those associated with benign hypertension, and the arteriosclerotic process is only part of the general process, so that renal function is normal. The sclerosis is chiefly a hypermyotrophy of the media, and the intima is little affected. Renal function is only affected passively through circulatory weakness when it ensues. In the arteriosclerotic processes of the senile type, the intima is affected and the glomerular blood supply may be diminished, so that renal function is interfered with and hypertension results. This is the so-called malignant or combination form, pathologically known as the primarily contracted kidney, and conforms to the clinical picture of terminal glomerulonephritis, but occurs later in life. Instances of nephritis with arteriosclerosis in advanced age are of this group.

Volhard and Fahr found the incidence of the hypertensive renal disease to be as follows:

Terminal glomerulonephritis ..... 38 cases
Benign arteriosclerosis .....268 cases
Combination form ..... 36 cases

The nephroses are far rarer than any of these in their true uncomplicated types.

TREATMENT

This classification is of little value in treatment for obvious reasons, and Widal's clinical classification is of better working value. He divides the cases into those in which there is salt and water retention, those in which there is nitrogen retention, and the mixed form. The fundamental element is to provide a diet based on the ability of the kidneys to handle water, salt, and nitrogen, respectively. This summary of the treatment is necessarily brief, and only the salient points emphasized.

When we remember that practically all cases of chronic nephritis begin primarily as acute cases, either mild or severe, the thought is immediately forced upon us that so many of these apparently mild acute cases are entirely overlooked. In all acute fevers, particularly of the coccal variety, the urine should be repeatedly examined, and particularly during convalescence must the case be under strict surveillance so that no renal development may be overlooked, and if the urine is not normal, bed rest and proper dieting should be adhered to until these symptoms subside. In acute kidney disease, kidney rest is of prime importance. The diet must be regulated according to the function of the particular case in question. In cases of salt and water retention the fluids must be restricted materially, in order to favor the elimination of the fluid from the hydrophilic tissues. The diet, of course, should also be salt-free. In cases of nitrogen retention or in cases showing frank uremic symptoms, the protein content of the food must be either entirely eliminated or at least reduced to an absolute minimum. Epstein is inclined to think that it is advisable in cases with albuminuria to give a moderate amount of some of the milder proteins, as egg albumin, on the supposition that this makes up for some of the protein-tissue waste, which disappears in the urine as albumin. This is still a mooted question, however, and clinicians are rather reluctant to generally accept his idea.

Drugs occupy practically no place in the treatment of acute kidney disease, and may do distinct harm, particularly the theocine derivatives. After the acute stage has subsided, iron is of distinct value. Bed rest, absolute, should be in-

sisted on in all cases. If any signs of cardiac insufficiency develop during the course of the acute process, digitalis is the medicine of choice. Diaphoresis and catharsis can be resorted to, and daily sweats are of distinct value, oftentimes considerably accelerated by a preliminary dose of pilocarpine, of from 1-5 to 1-10 of a grain. In severely ill, uremic cases, the pilocarpine oftentimes can be persistently used, and in personal cases I feel that its use in repeated doses for an hour or two has often been a life-saving measure. In the acute cases, furthermore, venesection is probably of value, as the anemia is not so marked in these cases.

In the subchronic glomerulonephritis, the picture usually associated in our minds as the chronic parenchymatous nephritis, the salt and water retention must be combated by a reduction in the water intake and salt. It is difficult to say what the optimal amount of water is which should be taken by these patients, and no consistent work has been done to establish this point, as emphasized by Christian, but there is probably no evidence contradictory of the fact that the amount should be, at least, considerably reduced. It is questionable whether drugs are of any value. If cardiac complications ensue digitalis again must be used. The diuretics are questionable according to the best authorities. Diuretin and agents of that kind, if given at all, should be given intermittently and not continually, the best way, probably, being to give it two or three days, and then stop for an equal period of time. By restricting the water we usually promote artificial diuresis, due to the elimination of the edematous fluid. Catharsis is also of value in these cases, promoting kidney rest. In cases of this kind and also in the nephroses accompanied by edema, we often have diuretic crises, that is, the patients for a long period of time do not seem to show any effort at increased elimination of the water and salt, when suddenly things seem to start working, and in twenty-four hours very considerable amounts are passed. Iron is a necessity in these cases on account of the impairment of the blood. Bleeding in these cases is of no value whatever, and in fact may do serious harm on account of the attendant anemia.

When nitrogen retention occurs the proteids should be eliminated practically entirely. The heart must carefully be guarded in these cases on account of the hypertension, and, whenever symptoms of extremely high blood-pressure occur, rest is very important, even in well compensating cases otherwise. Diaphoresis, diuresis, catharsis, must all be pushed moderately in those cases which are well compensating, and rather vigorously in those that are not compensating well. These cases terminate either by uremia, cardiac defeat, or cerebral hemorrhage. In certain cases, which threaten to die of apoplexy, bed rest frequently brings the pressures down to reasonable limits. Digitalis must be used in cases in which cardiac failure threatens, and when it has developed the treatment must be directed toward the myocardial insufficiency. The latter cases can usually be recognized by the irregularity or rapidity of the heart action, by the approximation of the systolic and diastolic pressures, and by the occurrence of râles in both bases posteriorly in the lungs. The pushing of water intake in these cases is of doubtful value, and is harmful in the myocardial complications. Miller found recently that by giving the patient enormous amounts of water for several days he was unable to effect any change in the nitrogen concentration in the blood. Austin and Miller also found that even in spite of the apparent benefit derived from diaphoresis no change occurred in the nitrogen retention products. The acidosis in these cases of chronic interstitial nephritis is not due, as in diabetes mellitus, to the formation of acetone and diacetic acid, but is due to the retention of the products of metabolism. It is in these chronic cases that diuretin sometimes seems to be of distinct value, in some way apparently promoting diuresis and also seeming to have an indirect effect on the blood pressure and the general symptomatology dependent upon the hypertension. Focal infections in these cases must be removed with reluctance, as they frequently are resultant rather than causative, and their removal may add an increment of toxins overwhelming to the patient.

A FEW WORDS ON MALPRACTICE SUITS*

By Mr. R. H. Bosard
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MINOT, NORTH DAKOTA

Fractures are the greatest cause of malpractice cases, and this is true regardless of the actual presence of negligence on the part of a surgeon.

I believe it is conceded by medical authority that conditions with which the surgeon cannot ordinarily acquaint himself, in many instances, prevent getting a good union of a fracture where the best and most universal treatment is given. Some condition of the bones or of the patient, caused by his physical condition, which, if he is not already a patient of the surgeon, cannot be readily discovered, may prevent a union of the bone or cause a poor and weak union, which cannot stand the strain that will necessarily be placed upon it.

In several cases, to my knowledge, after treatment for some time, the physician has instructed the patient to come back for an examination in a week, two weeks, or a month, some such a matter; but, instead of doing so, the patient has let the matter run for six months or a year, and then, finding a bad result, has gone to some other physician for the operation which his own condition, and not the fault or negligence of the surgeon, made necessary.

In one particular case where a fracture of the arm was reduced, the patient in three or four days, becoming intoxicated, fell from a moving train. Upon calling on the physician, he was requested to have the arm pulled and handled to ascertain if the fall had in any manner disturbed the bones, and the patient refused to do this or allow his arm to be touched, but finally allowed an *x*-ray to be taken, and the physician, after removing the sling and outer bandages, left the patient and went into another room to adjust his *x*-ray machine. When he was ready for the patient, he found that the patient had left the office and disappeared without the sling or bandages, which were removed for the purpose of taking the picture. The patient never returned, but eventually turned up in a lawyer's office with a bad arm, and suit was brought. Fortunately, the physician had a record of his treatment with the dates, and the date of the call of the patient after the fall, and he also had two people in the office who remembered distinctly the statements of the patient as to his fall, and his refusal to allow the physician to try out the arm by pulling it, and also heard him consent to have the picture taken and saw the sling and bandages removed, and knew of the patient leaving the office before anything further could be done. This case dragged along a while, and was finally dismissed.

This goes to the point I desire to make in this paper, which is the necessity that a record be kept by all physicians and surgeons, made up at the time, that is to say, each night, so that the matters therein contained, such as date, conditions, symptoms, treatment, etc., are set down while fresh in the mind of the physician, and in the case of fractures, where anything happens, like a fall, too early use of the limb, or anything that is likely to cause a bad result, without fault of the physician, to set down the names of any persons who knew of the facts at the time.

Also when a bad result is discovered, another physician should at once be called into consultation who can be acquainted with the facts, history of the accident, treatment, etc., and view the result and judge from the facts and the result whether the treatment was proper and the attending physician without negligence.

Careful practice along these lines will, in my opinion, practically eliminate malpractice cases. If a bad result is obtained, with or without fault of the physician, if he discovers it, after consultation with another physician, new treatment may be applied and the patient eventually recovers O. K., well satisfied; while if the physician reducing the fracture allows some one else to first discover the bad result, a few words carelessly dropped may cause a lawsuit to follow, while had the same physician been called in consultation, read the history of the case and treatment, in all probability it would result in new treatment, satisfactory result, patient satisfied, and no lawsuit.

A case where the physician can afford more than a little prevention, and escape taking a large dose of the cure.

I think that the physicians should make a little more effort in making and keeping a clear and rather full record in cases of fracture, and I believe that if they will do so, and those records are made at the time, and from time to time as the treatment is given, changed, or discontinued,

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the dates of visits and examinations set down, it will tend greatly to reduce the number of malpractice cases.

I also suggest, without any attempt or purpose of criticism, that when a patient comes for consultation, and you find him with a defect, owing to a bad result from the reduction of a fracture, before passing judgment upon the physician who reduced the fracture, you try and acquaint yourself with the history of the accident, treatment, etc., as shown by the record of the attending physician; then if you are satisfied that the physician was to blame, without any negligence on the part of the patient, say so, and, if you think it necessary, tell the world, but do so only after you have looked at both sides of the case and become thoroughly satisfied.

Now, a word about expert testimony. The plaintiff in a malpractice case ordinarily must rely upon the testimony of a physician to prove negligence on the part of the defendant physician, amounting to malpractice. The plaintiff calls the physician on the stand and proves by him his preparation for his career, such as college degrees, hospital training, and general practice for a number of years. Having thus qualified the witness as an expert, he then asks him what is termed a hypothetical question. This is supposed to embrace all of the facts which have been testified to in the case relative to the accident, injury or illness, the physician's diagnosis and the treatment, and after stating these facts usually winds up by saying: "In your opinion was that treatment correct and proper treatment for the injury or illness described?"

A physician must use a great deal of care and caution when he is on the witness stand in such cases. He must carefully analyze the question in all its aspects before giving his answer. It is possible and in fact quite likely that there are not enough facts stated to justify the physician in forming his opinion and in that case the physician very frequently answers: "I cannot answer that question." And the physician may also point out to the counsel, in his answer, wherein the facts are not sufficiently definite to allow him to formulate an opinion as to whether the treatment was or was not proper. It must be borne in mind that the plaintiff goes upon the witness stand and testifies to what he claims to be the facts with reference to the accident, injury or illness, and to what he claims to be the facts with reference to the treatment given by the physician. While this may be disputed by the defendant physician when it comes time to put in his defense, nevertheless, if the facts as stated by the plaintiff, and which he has testified to, are all the facts in connection with the matter, are put in hypothetical question, and the physician, being the expert witness, is asked that hypothetical question and he answers that in his opinion such treatment would not be proper, and that the bad result which the plaintiff is suffering from was, or might reasonably be expected to result from such poor treatment, the plaintiff has made his case. That is, regardless of the testimony which the defendant may subsequently submit, the plaintiff has made a sufficient case to justify the court to submit the case for determination to a jury.

Therefore, there is the greater need for careful consideration of the facts set forth in the hypothetical question than there would otherwise be.

For instance, the plaintiff may refer to the fact that he suffered an accident which resulted in a fracture of his forearm. That the defendant physician, when he was called, did not at once attempt to reduce the fracture and replace the bones in their normal condition and that he did not put on a plaster paris cast and only after a few days did he put on loosely fitting splints. That eventually the plaintiff has the arm in its present condition, which is bad. It will be noticed that in such a question there is entire lack or absence of any statement relating to whether the skin and flesh were broken and the ends of the bones driven through the flesh and skin, whether the flesh had been injured and was torn and swollen and otherwise not in condition to allow an immediate reduction of the fracture, or to allow the same bandages to be applied as would be applied if the flesh and skin around this fracture were uninjured. I mention this merely to call your attention to the fact that you must be alert and before expressing your opinion as to whether or not the treatment was or was not proper, you should know what the conditions were that confronted the defendant physician at the time he administered the treatment, and if the facts are sufficient, and the question is not sufficiently full to give you the information, you are justified in stating that you cannot answer the question, or that the treatment was probably correct.

There is also one other feature which must be borne in mind at all times by physicians who are called upon to give expert testimony, and that is that where there are two or more known and used methods of treatment, one considered by

some, possibly by all, as the best and most approved treatment, the other one or more treatments which have been and still are to some extent used and have been considered proper, even though not the most approved, you should be careful in considering that the treatment given was not proper treatment, merely because it was not the most approved and latest developed treatment for such a case.

You should bear in mind and remember that the physician, who is defendant in the action, is liable for malpractice for a failure to use the ordinary skill and judgment of physicians in the vicinity in which the physician was practicing, or in similar vicinities, and the rule would not hold a physician in a rural district, where he did not have access to *x*-ray and other improved means of determining the exact condition of the patient and rendering treatment accordingly, to the same degree of care and skill as the physician who is practicing in a city hospital with all the latest known appliances at his command, and further you must remember that a physician is not liable strictly for an error in judgment, if he has made a careful examination and diagnosis and determines on a certain treatment for the particular ailment or injury as the best in his judgment to be given, under all the circumstances, which he discloses, based upon the exercise of proper skill and care. If you, in the exercise of your best judgment, would consider some other or different treatment, you must not condemn your fellow practitioner for deciding otherwise on the facts when both treatments are universally and generally used, some in one case and some in another, to be determined by the best judgment of the physician administering.

These are matters which I call to your attention because I believe that when a man is testifying as an expert witness he should be very careful to know and understand the facts as they are stated in the hypothetical question, and be able to determine whether those facts are sufficient on which to base his opinion and to refuse to base his opinion where those facts are not sufficient.

MASTOIDECTOMY UNDER LOCAL ANESTHESIA*

By Lawrence G. Dunlap, M.D.
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Without entering upon a discussion of the etiology, pathology, diagnosis, direct and differential, of mastoiditis, let us give consideration to the operative interference under local anesthesia.

Local anesthesia[1] is not of like value in all branches of surgery. In ophthalmology, laryngology, and rhinology it has been the most important means of anesthesia for some time past; in urology it is of much importance; in otology and gynecology, up to the present time, it has been of minor importance, limited to so-called ambulatory surgery.

The following facts and opinions have been evolved during the past three years from experience in twenty-five acute mastoids operated on under local anesthesia. The first operation, done three years ago, was performed soon after Hays[2] reported one such operation under cocaine anesthesia. The history briefly is as follows:

Patient, a dentist, aged 30, married, had been under observation about six years with a diagnosis of chronic nephritis in his only functionating kidney. He developed a streptococcic tonsillitis, acute left suppurative otitis media, which was drained, but streptococcus hemolyticus mastoiditis followed in three weeks, complicated by facial nerve involvement and a flareup of the kidney condition. A preliminary hypodermic of morphine, gr. ¼, and scopalamine, gr. 1/100, was given before operation. The line of incision was infiltrated in all directions with .5 per cent cocaine and 2m of adrenalin per drachm. Following the skin incision and periosteal exposure, the entire periosteum along the region of the operative field was elevated with solution. No pain was evinced. A long needle was later used to inject the tip and sternomastoid region. The patient noticed no facial nerve irritation or disturbance at any time during operation. He talked through the right side of his mouth.

The eburnated table of the mastoid was 1 cm. thick. Medial to this the cells were filled with granulation tissue. The inner half of the tip was a mass of thick yellow pus. The facial nerve and lateral sinus were not encroached upon, but the overlying necrotic bone was removed. On approaching the antrum and middle ear the patient spoke of something getting thin. He kept up a flow of conversation as he knew I had never seen or done such a case before, and he wanted me to know his experiences. The only pain was felt when the probe entered the middle ear, then the patient said, "now you are through the thin place." Next morning the facial nerve paresis was gone, and he made an uneventful recovery. There was post-operative perfect physical rest, no vomiting, thirst or gas pains.

A month later a doctor and a school teacher

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were operated on by the same method. The doctor went to sleep four times during the operation, which lasted thirty-five minutes, awakening each time to ask if we were still at work. During the next few months a boy, aged fourteen, a butcher, a maid, and two others were operated on, making a total of eight cases. Local anesthesia was the method of choice and not of necessity in all but the first. During the same fall and winter in the army I did fourteen more, and have done three since my recent release, making a total of 25 on all sorts of risks with no mortality.

The only complication which I have encountered in twenty-five simple, local mastoids was one where a 10 per cent cocaine solution was furnished instead of a 1/10 of 1 per cent solution; 12c.c. of this or eighteen grains of cocaine hydrochloride were injected before the error was noticed. Immediate incision and elevation of the periosteum, without any effort to stop the hemorrhage, released the solution from the tissues, and the blood washed the area so that the operation could proceed in five minutes, although the patient shook violently at first. He made an uneventful recovery after a painless operation.

The only other complication was the breaking of a needle in the temporal muscle, which was easily recovered. This will rarely occur if the needle is not pushed in to the hub. However, we could hardly say that these complications were comparable to the confusion that may happen during a mastoidectomy under ether anesthesia. For instance, a man of considerable standing lighted a match to test the pupillary reflexes and caused quite an explosion and burn of the patient's face.

A comprehensive knowledge of the sensory innervation of this region is essential.[3,4] The ear muscles are innervated by the auricularis, auriculotemporalis, occipitalis minor, and auricular branch of the vagus; the skin and bony canal and the outer surface of the drum by the auriculotemporals, and the auricular branch of the vagus passing through the skin and bony canal into the organs of hearing. The inner surface of the drum mucosa of the attic and the antrum and eustachian tube are innervated by the tympanic branch of the glossopharyngeal. The mucous membrane of the mastoid cells is supposed to be innervated by the nervus spinosus of the mandibular, but I have found no sensory supply in the mastoid cells or antrum, perhaps due to the destruction from suppuration or because the mastoid cell musoca is more poorly developed than that of the middle ear.

The periosteum is a sensitive structure, even under normal conditions. The bone receives a sensory nerve supply from the periosteum, and, if the latter is completely separated or rendered insensitive, bone in this location and its entire cross-section become absolutely insensitive. Muscle, per se, is insensitive, but sensory nerve tracts pass through connective tissue septa of the muscle bundles. Infiltration anesthesia by contact of 1 per cent novocaine and five drops of 1 to 1000 adrenalin solution per ounce induces satisfactory anesthesia. The injection is begun by endermic infiltration of wheals and the needle placed into the anesthetic edge of successive wheals. For each centimeter of incision about 1 c.c. of fluid is used. The injected nerve is cut off from the central nervous system, reducing shock, which is carrying out part of Crile's anoci-association idea.[5] During ether anesthesia the stimuli from the incision and dissection are conducted to the central nervous system, and produce more or less shock, although the patient is insensitive. Neuman[4] injects beneath the upper wall of the external auditory canal, and the fluid passes under the drum membrane and the mucosa of the tympanic cavity. I have found this unnecessary. The canal is anesthetized by drawing the ear forward and inserting the needle just behind the ear along the anterior surface of the mastoid process. For simple mastoidectomy, infiltration of the soft parts is sufficient. This excludes all operative, but not psychic, stimuli. The circular anesthesia of Hackenbrach, circumscribing the operative field with the anesthetic solution so that all nerve supply to this part will be interrupted, has not been found necessary, the infiltration anesthesia, due to contact with sensory elements, being sufficient to cause complete break in all conductions. Novocaine[6] causes no irritation to the most delicate tissues, is of zero toxicity, its action is more profound and the duration is increased by adrenalin, minims 5 per oz.

Mastoidectomy may be classed as a serious operation. Every effort should be made to conserve the remaining resources of the already crippled patient and aid him to make an uncomplicated recovery. A large percentage of mastoid surgery may be accomplished under local anesthesia more safely and with greater comfort to the patient than with the use of general anesthesia. It is not a surgical stunt to be attempted

only by "local anesthesia gymnasts," but a sane routine procedure requiring no special equipment and with simple but careful technic. The patient approaches operation with a normal amount of fluids in his system, and avoids the dreaded general anesthesia with its disagreeableness, depression, and bad after-effects. There is a need of tact and refined technic, or, as Farr says, "greater finesse, locally or generally," than when under a general anesthetic. Cutting, not tearing, is performed. Sharp dissection and careful traction and manipulation are practiced. This reduces trauma. Sepsis[5] and morbidity are in direct proportion to trauma, hence the need for delicate handling of tissues. While using this method for the past three years I have never yet had to add inhalation anesthesia, which speaks for itself. The strain on the surgeon is undoubtedly greater, but the all-important factor is the patient's welfare. The margin of safety over general anesthesia is greater, and more extensive application of novocaine is indicated to benefit the science of medicine and the art of surgery.

Goldstein,[7] in the army, resorted to local anesthesia because constant presence of atmospheric infection and the frequency of active pneumonia presented many risks in major operations under protracted general anesthesia. He discusses local anesthesia as a possible regular and routine procedure, using any 10 c.c. syringe, 1 per cent novocaine in sterile distilled water with the addition of five drops of adrenalin per ounce. He colored his cocaine solution with methylene-blue, to avoid mistakes of solution, such as that of which I spoke. The subcutaneous injection is made from the base of the zygoma down to the mastoid tip, injecting a region one inch from the insertion of the ear. Deep injections are made by plunging the slanting needle down to the mastoid bone, thus getting beneath the periosteum and the mastoid muscle. The usual sweeping incision is made from the zygomatic line to the mastoid tip and down to the bone, and the operation proceeded with in the usual way, being careful of the posterior canal wall, which is quite tender unless injected. If it is injected there may be some swelling for twenty-four hours. Thus a procedure has been worked out independently, by various workers,[8] practically the same, with a minimum of pain and risk to the patient's health, no mortality, and no wound slough.

SUMMARY

1. Local anesthesia in mastoidectomy possesses marked advantages over general anesthesia inasmuch as it is not associated with any danger to life, as are chloroform, ethylchloride, or other general anesthestics.

2. The general condition of the patient, as well as surgical convalescence, is not disturbed. When a well individual misses three or four meals consecutively he is not in the best of condition, and how much more must this apply to the sick patient who misses before and usually two or three meals after a general anesthetic. On the other hand, the patient who is operated on under local anesthesia, misses no meals and is in much better condition to stand the operation.

3. Local anesthesia gives a relatively bloodless field, either maintaining the blood-pressure at its usual station or lowering it, in contrast to ether, which raises it.

4. Trauma and shock are minimized.

5. No struggling during the operation so there is better relaxation. Respirations are normal, and the cardiorenal system is less disturbed. Immense satisfaction from safety of the patient.

6. It eliminates any but a nominal anesthetist, who need not interfere with the operating field.

7. The patient being wide-awake can give valuable aid to the operator during a mastoidectomy by mentioning sensations in the face whenever the sheath of the facial nerve is approached and by helping to locate the antrum and middle ear. He feels distinct pain, which differentiates this region from a large cell and prevents the occasional accidental dislocation of the ossicles.

8. A preliminary hypodermic, one hour before operation, of morphine, gr. ¼, and scopolamine, gr. 1/100, reinforces the local anesthesia.

9. Local anesthesia is of sufficient duration to carry the patient over the painful hours immediately following the operation.

I wish to give credit to the Quain & Ramstad Clinic, of Bismarck, N. D., for so kindly allowing me to report the first eight cases which were performed while I was in charge of the section of Head Surgery. Complete records of the fourteen cases done while chief of Head Surgery, U. S. A., G. H. 25, are not available, and three cases since merely reiterate previous findings of a painless operation and uncomplicated recovery.

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WAR CONTRIBUTIONS TO CIVIL SURGERY*

By Stanley R. Maxeiner, M. D.
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The essayist will attempt to present a few lessons and conclusions which are based on a review of the literature and from his own personal experience and observation while serving for twenty-two months with the British army as Battalion Medical Officer, Medical Officer attached to Field Ambulance, surgeon at a war hospital in London, and as radiologist and surgeon at a casualty clearing station.

THE PROCEDURE IN SHOCK

Every effort was made at every relay from the front line to the advanced hospital to combat this condition. In the dressing stations the soldier in shock was placed in blankets on a stretcher suspended over oil stoves, and, while his wounds were being dressed and splints carefully applied, he was given hot drinks or perhaps hypodermic salines. At the casualty clearing station it was found very early that if these cases were operated on at once, the mortality was very high. During the necessary delay the patient was put in a resuscitation ward, and further treatment instituted. Absolute rest was imposed and more heat applied. Fluids were given by mouth, per rectum, hypodermically, or into a vein. It was remarkable how quickly these cases responded to transfusion of blood, whether there had been hemorrhage or not. The patient was grouped at once, and a proper donor, who was always on hand, furnished 500 to 1,000 cc. of blood.

We used many methods of transfusion, but eventually adopted in our hospital the following technic, which is described because of its simplicity and efficiency: 500 to 1,000 cc. graduate; glass rod; large needle with a very clean lumen; 2 per cent sodium citrate; 500 to 1,000 cc. sterile salt solution; funnel; rubber tube; and second needle. The large, clean needle, pointed distally, is introduced into a vein of the donor, and the desired amount of blood allowed to run into the graduate containing a requisite quantity of sodium citrate solution to make a 0.2 per cent solution with the blood. Both are steadily mixed with a glass rod. The citrated blood is then introduced by means of the funnel, tube, and second needle into a vein of the patient. The blood may be preceded or succeeded, as desired, by additional salt solution, intravenously. This method is so simple that we have, of late, in civil practice performed transfusions in the patient's bed, as was our custom in France. At the front we often had citrated blood in sterile flasks kept on hand for use in an emergency. A most important factor regarding transfusions is not to wait too long, but to act before the patient is in extremis.

The Inter-Allied Surgical Congress expressed the opinion that the best treatment for shock is rest, warmth, morphine for pain, fluids, and blood-transfusion.

THE TREATMENT OF WOUNDS

The first principle of the treatment of wounds founded on the technic used in war surgery is based on the fact that early wounds are contaminated, but not infected. When a "débridement" is done, all contaminated and devitalized tissues are excised, the devitalization being determined by the reaction of the tissue to a mechanical stimulus and whether or not it bleeds. Foreign bodies are removed, and from 80 to 90 per cent of all wounds so treated may be closed primarily. If it is not considered advisable to do a primary suture, the wound may be packed widely open with gauze, and in seventy-two hours a delayed primary suture done. This was usually the time also of the first dressing. Some surgeons chose to institute irrigations every two hours with Dakin's solution during the three-day interval in place of the dry gauze pack. It is to be noted that the more experienced the surgeon, the more thorough and complete was the "débridement," and the more successful were the primary sutures. By this form of treatment many cases of compound fractures were converted at once into simple fractures, abdomens were less often drained, and wounds into joints were invariably closed primarily. Cuthbert Wallace reports 625 primary sutures with 444 successes; 69 had some union, and 69 were failures. In one series of 100 compound fractures, 75 per cent were closed primarily with success. Approximately 50 per cent of all wounded were treated by primary suture.

When wounds became septic, Dakin treatment was usually instituted at once. In our hospital in place of the glass manifold tube connecting the many rubber tubes, it was found to be an advantage to leave the ends of the tubes protruding from the first dressing and to irrigate each tube individually. This procedure, though some-

what more time-consuming, insured that each tube was functioning, and that all the solution was not running through one tube. Another feature essential to success in the Dakin treatment is the necessity of standardized solutions. Many of these wounds with proper treatment soon had bacterial counts sufficiently low and presented a clinical appearance suitable to permit closure by secondary suture or by skin-grafting. When grafting skin from one individual to another, it is now generally accepted that they should be grouped the same as for blood-transfusion.

THE USE OF ANTITETANIC SERUM

In the British army it was ordered that antitetanic serum should be used in all cases in which the skin surface was broken and in cases of trench feet. This may seem to be overdoing it a bit in civil surgery, but we do not use it often enough, and it is our opinion that the courts will eventually hold that the man who fails to use antitetanic serum as a prophylactic measure in a case of tetanus is both neglectful and liable. Antitetanic serum was given as an initial dose of 1,500 units or in three doses of 500 units each at weekly intervals. The latter method seemed to render better protection against the so-called case of delayed tetanus.

FRACTURES

The great advance made in this particular subject should be of special interest to every surgeon. Considering every compound fracture a contaminated case, a thorough mechanical cleansing, that is, "débridement," is indicated. Depending on the extent of the injury, the wound may be closed by primary or by delayed primary suture, and the compound fracture converted into a simple one. If this procedure meets with success, the functional result is thereby greatly improved, the period of disability often cut in two, and the patient saved many hardships.

Fracture of the femur was one of the greatest problems of the war, and deserves special attention. In 1914 and 1915 most of the fractures of this type were transported with the long Liston splint. All arrived at the casualty clearing station in deep shock, and the mortality was very high, indeed, ranging from 40 to 50 per cent. Later, in 1916-1917, the Thomas outfit was generally adopted, and applied by the regimental medical officer or trained orderlies and stretcher bearers on the field. These cases then arrived in much better condition, due principally to the improved methods of transportation, so that the mortality rate was reduced in 1918 in the British army to about 30 per cent.

Treatment by extension in the case of fracture of the lower extremity was quite generally accepted by all of our Allies. The use of the calipers and Stenman pin is a great advance in hospital treatment when extension is desired, while the Sinclair glue with gauze is a great improvement over the old adhesive strapping.

FORMULA

Glue	49 per cent.
Thymol	1 per cent.
Cal. chlor	1 per cent.
Aqua	50 per cent.

Massage and early passive motion are essential to an early restoration of function. Splints adjusted and constructed to permit the passive motion of joints contiguous to a fracture from the first day, have been devised and successfully used by Blake. Many cases thus treated have a complete range of motion of the limb when the fracture is healed. This should be of value in the conservation of man power by greatly shortening the period of disability in fracture cases.

The *x*-ray is as indispensable in this group of cases as in the removal of foreign bodies, both from the standpoint of diagnosis and treatment.

THE WOUNDS OF JOINTS

The treatment of wounds of joints was almost revolutionized by war practice. After a thorough mechanical cleansing of the wound and of the joint by "débridement," the joint being often aspirated, first, to determine whether or not it had been penetrated, the capsule was invariably sutured without drainage and the other soft tissues closed by primary or delayed primary suture. By this method the usual stiff joint of pre-war surgery was avoided. The subsequent treatment was passive motion, started at once, no splint being applied. Frequent subsequent aspiration may be necessary.

The knee-joint was the one most frequently injured. In the case of the knee, if the joint became septic following a penetrating wound, free lateral incisions were made early, irrigation with Dakin's solution, and passive and active motion continued. The movement of the joint promotes drainage and literally squirts the pus out of the joint recesses. Drainage or Dakin tubes into the joint cavity are unnecessary and harmful. Secondary suture may be possible later.

In cases requiring surgery of the abdomen there have been few changes. The case received early is usually best operated on at once, but, if

received late, many cases do better after rest, stimulation, the application of heat, and blood-transfusion. Surgery of the thorax under war conditions developed many improvements both in technic and results. The long incision parallel to a rib border with wide retraction of the ribs has usually proved more satisfactory than the large flaps that sectioned the ribs. Because of its vascularity and oxygenization the lung tissue is very resistant to infection. Gaping wounds of the chest, usually called "sucking wounds," cause profound shock, and should be closed at once, either by suture or by strapping. Hemothorax, following lung injury, requires frequent aspiration. A rapid, sudden increase of fluid in a hemothorax usually means the advent of infection. Empyema has been found to respond in many cases to irrigation with Dakin's solution by a special technic, and in many cases the routine rib resection, with its numerous objectionable features, may be avoided.

CONCLUSIONS REGARDING ANESTHETICS

The Inter-Allied Surgical Congress held that the anesthetic of choice is nitrous oxide-oxygen combined with local anesthesia. Surgeon General Bowlby reports the brilliant work of Captain Taylor and his anesthetist, Captain Marshall, who by this method reduced their mortality from 50 per cent in 1917 to 29 per cent in 1918 in a series of 100 consecutive gunshot wounds of the abdomen. Colonel Cabbott performed 90 amputations of the thigh under ether, and, later, 90 under spinal anesthesia, with a reduction in the latter series of mortality of 50 per cent, while Captains Taylor and Marshall reduced their mortality for this operation more than 200 per cent with gas-oxygen and local anesthesia.

Local anesthesia alone was employed very little in the British army, but toward the close of 1918 most trephining operations were done under local anesthesia, as recommended by Cushing, and many operations on the chest were being done with satisfaction. Repeatedly I saw ether or chloroform given to remove a foreign body that might more safely have been done with novocain.

Great schools and shops are now being operated by the Government to re-educate the soldier incapacitated for his old position. This restores him to society, a self-supporting, self-respecting citizen, dependent on no one. The problem of the industrial cripple is not only a local issue but a national one, and the work of rehabilitation should be kept up in the future and made to apply to the man rendered unfit by an industrial accident. He will then no longer become a cast-off, but by re-education and training he may continue to be self-supporting.

SUMMARY AND CONCLUSIONS

1. The Inter-Allied Surgical Congress has outlined definitely the most successful treatment for shock.

2. Blood-transfusions prepared wounded soldiers for extensive surgical operations and saved thousands of lives. Every hospital should have a pathologist or technician available for grouping patients, and donors already grouped should always be accessible from among its employees. Blood should be transfused before, during, or after operations on patients suffering from severe shock.

3. More attention and better care of the slightly injured are indicated.

4. "Débridement" should be performed on contaminated wounds of industry the same as on war wounds. Primary, delayed primary, or secondary suture should be practiced extensively in an attempt to shorten the period of disability in industrial injuries.

5. Antitetanic serum should be used in all industrial accident cases with abrasions of the skin.

6. Conversion should be made, where possible, of compound fractures into simple fractures, following a "débridement," the cases usually calling for delayed primary suture. Earlier passive motion and massage of contiguous joints in all fractures is advisable. General adoption of the Thomas outfit for the transportation of cases with fractures of the extremities is urged.

7. The radiologist should indicate more careful localization of foreign bodies with indelible marks upon the skin before open operations for their removal.

8. Routine closure of wounds of joints after thorough mechanical cleansing should be practiced.

9. Early incisions are called for in septic joints in conjunction with Dakin irrigations and passive motion.

10. Ether and chloroform should be displaced by the safer and better methods of anocia-association or local anesthesia. Cushing advocated local anesthesia for all craniotomies; it is advocated by others for all operations on the chest, and it certainly is called for in almost all minor operations.

11. The employment of trained attendants for

late treatment of cases with functional results below normal is recommended and the establishment of schools for the re-education of the industrial cripple.

12. The war has taught many lessons and it would seem that their greatest field for usefulness is in industrial surgery, in which field they apply not only to the specialist but to every general practitioner who is occasionally called upon to treat such cases.

TWO CASES OF CORN-SILO POISONING

By J. R. Sturre, B.S., B.M., M.D.
WATKINS, MINNESOTA

I do not know whether anyone else has encountered what I have to relate in a general practice in the country. I shall not attempt to give the chemical solution of the problem, for I should utterly fail if I tried to do so.

I attended a patient, a boy, 14 years old, for chorea, over a period of approximately two months. The boy made good progress and began doing small chores about the farm. Then I was called to see him one afternoon. He came into the house, apparently choking, saying he had a lump in his throat, and could not swallow.

Physical examination revealed frontal headache, a temperature of 99°, pulse 100, respirations 25, and cyanosis.

I ordered him to bed, and left a purgative to be taken.

Next day I returned and he still had a severe headache, was still somewhat cyanosed, and his breathing twenty-five per minute with a temperature of 99.2°. At this time physical examination disclosed moist fine râles all over the chest.

This left me at a loss as to a true diagnosis, but with purgation and salicylates he recovered in four days.

I should not have known what the trouble was, had his father not gone out to finish the boy's work, which consisted of cleaning out the old silage from the silo. While so occupied he began to feel sick and called me. Upon arriving I found him in the same condition as I found the boy; but being older he gave up before inhaling as much of the gases as his son, and gave the history pointing to the silage.

I believe these two cases illustrated the effect of the absorption of deleterious materials, gases and vapors, such as CO_2 and whatever else may be the products of the fermentation of silage.

I shall be glad to hear whether anyone has had a similar experience.

REPORT OF A CASE OF SUBCUTANEOUS GONORRHEAL ABSCESSES

By George W. Kirmse, M.D.
MINNEAPOLIS

On July 20th of this year Mrs. W., of Morton, Minn., was referred to me complaining of severe headaches. She had had her teeth removed on the left side, and her doctor sent her to me as an antrum case.

Transillumination and the *x*-ray showed that she had no infection of the antrum at this time; however, examination showed that she had a nasal spur and a polypoid middle turbinate on this side. This was removed on the 22d inst., and subsequently we examined her eyes and found that she had a three-quarters diopter of astigmatism, which was corrected.

At this time the woman also complained of having abscesses, but this not being my kind of work I sent her to her home doctor for treatment.

On the 12th of October she wrote me regarding her condition, stating that all her headaches and head troubles had disappeared, but that the abscesses had not.

On the 14th of October she again appeared at my office complaining of these abscesses.

History. — During childhood she had chicken-pox, measles, and whooping-cough, and an infection following vaccination, which kept her in bed one year. Otherwise her condition was good. She has had three children, all girls, ten years, nine years, and fourteen months, and one miscarriage. In May, 1920, she had leukorrhea, and abscesses began at this time, one on her groin and one in the middle of the abdomen, underneath

the umbilicus, and others in various places along the buttocks.

On the second day of the fifth month, 1914, she was operated on at Rochester by Dr. Judd for drainage of the gall-bladder and chronic appendicitis, and at that time had no uterine disturbance or any abscesses.

Family History.—Her father died of consumption. Her mother is living, but is not well. Two brothers are living, and in good health. Three brothers are dead. All died under one year of some children's trouble. Four girls are living, fairly healthy; two are dead. One died under one year, and one at nine years, of pneumonia.

Her husband is thirty-four years old, and very healthy. He has had typhoid fever when a boy, but no evidence of any venereal trouble. Children are all well except one, who has some slight eye trouble. None had sore eyes following their birth.

As the case was interesting and as she had been treated by her own physician for six months without any apparent result, I had her sent to the Deeds Laboratory to have a smear made of the abscess and the discharge underneath the umbilicus. Up to this time I had no idea as to what caused her condition. On October 13th, I received the following report from the Deeds Laboratory:

Mrs. W., smears and culture from subcutaneous abscess on abdomen showed the presence of staphylococcus pyogenes aureus and gram-negative diplococcus having all the external and morphological characteristics of the gonococcus.

We had an autogenous vaccine made from the discharge and the patient was sent home to her family physician for treatment.

The Deeds Laboratory of Minneapolis makes the following report on the case:

LABORATORY REPORT

Smears were made direct from the lesion on this case, and examination showed the presence of gram-negative diplococci, in large numbers, both extracellular and intracellular. They were of the typical shape of the gonococci, and hence cultures were made from the lesion. These cultures were made by transferring material from the lesion to blood-streaked agar plates, plain agar slants, blood-serum media, and glycerine agar. At the end of forty-eight hours incubation at 37° C., there appeared colonies which had the semblance of minute, irregular, dew-drop spots. Slides were made from these colonies, and the smear stained by Gram's method, with the result that the organism was typed as the gonococcus, in view of the fact that there was no growth of the organism upon the other media and because of its morphological characteristics. It must be mentioned, however, that there were also present in the smears from the lesion, and upon the cultures, staphylococcus pyogenes, aureus and albus.

A complement fixation for gonorrhea was made upon the patient which resulted in only a slight fixation, not of sufficient amount to be classed as a positive. The Wassermann test and the Noguchi modification of the Wassermann were negative.—Forrest E. Deeds, Ph.C., B.B., M.S., the Deeds Laboratories, Minneapolis.

This case is reported because, to our knowledge, only twenty like cases are on record.

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THE MINNEAPOLIS ALDERMAN AND THE "IRRECONCILABLES"

The recent controversy, which has been carried on for many months in Minneapolis, between the Welfare Board and the chairman of the Council Committee on Health and Hospitals, has terminated in the defeat of the alderman and his supporters. As a result, Dr. Mabel Ulrich was recommended by the Health and Hospitals committee, with the lone exception of Dr. Kistler, the alderman referred to, and her reappointment by the mayor was confirmed by the Council by a vote of 17 to 6.

This matter has not been of interest to Minneapolis alone. It has attracted wide attention throughout the state and the Northwest, where Dr. Ulrich has been prominent in Red Cross work.

The mayor made his recommendation in August, 1920. It was referred to first one committee and then another. It was brought up in the Council and again referred, twice referred, to the Council Committee on Health and Hospitals. In the meantime there had been two meetings of the opponents of the mayor's recommendation, and one public hearing of the proponents of Dr. Ulrich. During these biting times and bitter meetings (as some of them were), the medical politicians were out in full force, that is, they thought they were. As a matter of fact, the Hennepin County Medical Society, in voting for the reappointment of Dr. Ulrich, had 175 members at the regular meeting, and there was but one dissenting voice to her reappointment. The opposition claim, however, that they had 161 names of medical men on a list who were opposed to Dr. Ulrich. In this list there were some duplications, and there were some signers who were not members of the Hennepin County Medical Society. They, however, were in the minority. As a matter of common knowledge this opposition was not only to Dr. Ulrich, but included Dr. Harrington, the Commissioner of Health. Consequently the fight was as much his as it was Dr. Ulrich's,—and yet he is only an employe of the Welfare Board. The opponents made many sarcastic and bitter remarks about Dr. Harrington. The proponents had many good things to say about Dr. Ulrich. And so it was delayed until every one grew tired and impatient over the controversy.

Dr. Kistler and his supporters submitted the following reasons why Dr. Ulrich should not be reappointed:

"1. Owing to the fact that Dr. M. S. Ulrich is not in active practice, she is not in a position to properly represent on the Welfare Board the physicians of Minneapolis who are in general practice."

The only answer to that is that Dr. Ulrich was in private practice in Minneapolis for ten years before she went into public health work. In addition to that, she is the mother of three children, and is familiar with housekeeping.

"2. Because she has, as a member of said Board, consistently favored the employment of non-residents for positions under the control of said Board."

The explanation of this is, that several men in Minneapolis were considered for and offered the position of Health Officer, but they declined because they knew the political troubles ahead of them.

"3. Because of the increase in the expense of the Health Department without corresponding increase in efficiency."

This charge has not been substantiated, for the statistics show that the Health Department was run for an amount twelve thousand dollars less than estimated by the previous Health Department for the year 1920.

"4. Because of lack of efficiency in controlling contagious diseases."

This is merely a matter of individual criticism. As a matter of fact, communicable diseases have

never been so well reported to the Health Department, hence the seemingly large number.

In summing up the report of the minority, which consisted of Dr. Kistler, the alderman, great stress was laid on many charges against the Health Department; and he would have introduced other things against the General Hospital management, and he said many unnecessary things about Dr. Ulrich. He even went so far as to quote from THE JOURNAL-LANCET, and read a small portion of it. His principal argument was that the LANCET had given five pages to a Mayo paper written by Dr. M. S. Henderson, and had given Dr. Kistler only a page and a half. Really, reduced to proper dimensions, he got one column and a quarter. He clinched his argument by saying that THE JOURNAL-LANCET was a Mayo-influenced paper. The editor of THE JOURNAL-LANCET would gladly give Dr. Kistler five pages if he could write as good an article as did Dr. Henderson, but, of course, Dr. Kistler is in politics and Dr. Henderson is in medicine.

The opponents of the whole situation, the Welfare Board and the Department of Health and Hospitals, had burnished their little hammers until they shone with keenness, but all to no purpose. They had their say, they repeated their warmed-over charges from one meeting to another, and used the same arguments; and each time the Committee on Health and Hospitals voted for the reappointment of Dr. Ulrich.

There may, of course, be very just criticism against the Health Department and other city departments, but it seemed very unfortunate that these criticisms should come out with such bitterness when the city of Minneapolis is trying to establish something durable and as free from politics as possible. It may be true that the Commissioner of Health, the Superintendent of the General Hospital, and the editor of THE JOURNAL-LANCET will never win the *Minneapolis Journal's* daily prize of five dollars for politeness, for, to be polite, one must be very considerate of others, and must use quarts of the oils of diplomacy, without which no great institution or department can run smoothly.

The few men who were the active supporters and speakers for Dr. Kistler and his cause may remain fixed in their antagonism, but, after all is said and done, THE JOURNAL-LANCET ventures to predict that the majority of the opponents of the reappointee and of the Health Commissioner will soon settle down to active work, and forget their grievances, and they will support both the Welfare Board and the Commissioner of Health, so that peace may return again between the two factions,—one of which has tried to break away from the Hennepin County Medical Society. The latter is regrettable, for the members of the profession have been on good terms and have been in a state of good-fellowship for many years, and anything that tends to disturb this peaceful relation is unfortunate.

The Hennepin County Medical Society should stand behind the city departments which are concerned in the matters pertaining to public health, regardless of their individual or their private, and perhaps selfish, opinions.

It is to be hoped that, hereafter, when any soiled political linen is to be laundered it will be done inside the four walls of the Hennepin County Medical Society rooms. The fight should be carried on there, if there must be a fight; and the decision ultimately reached should have the support of all members. In this way the Society is not exposed to needless criticism, the criticism of outsiders, laymen. Then, too, it is better for the entire organization to settle all their disputes before they are aired in the public press.

It is rumored, too, that Dr. List, Superintendent of the General Hospital, is very much disturbed by the politics of the situation, and contemplates resigning. Superintendents of hospitals are very difficult to secure, and it would be unfortunate for Minneapolis if a man of his training and ability were permitted to leave the institution. And yet he can at any moment secure a position which will be free from political embarrassment, and probably more remunerative than the one he occupies at present.

The credit for the work in behalf of the Welfare Board and the Health Commissioner belongs largely to two men, Mr. Otto Bradley, Secretary of the public health activities of Minneapolis, and Dr. Henry Wireman Cook; and, in addition to this, these men were responsible for the order of events and for the organization of the committees who took an active part.

ANOTHER MILLION-DOLLAR HOSPITAL

At the annual meeting of the Shriners, held in Portland, Ore., in the early part of last summer, it was agreed that each member should be assessed two dollars for the purpose of building a hospital for invalid and crippled children. Information regarding this enterprise, was not given out, however, until a very short time ago. For some reason, and probably a very good one, the

national committee made a request that Minnesota make a proposal by which a site might be furnished, and any other benefits that might be added to it that would lead the national committee to locate the hospital in Minnesota, as it is particularly advantageous to the Middle West.

Rochester has been very active in its endeavors to have the hospital located near the Mayo Foundation group; and with their usual active manner, they have already interviewed most of the delegates and requested them to throw their support in favor of the hospital being located in their city. Geographically, the city of Minneapolis is much more accessible to all points in the Northwest and Canada than any other city, and here is a golden opportunity for the city of Minneapolis to offer sufficient inducement in the form of a site in the outskirts of the city for this hospital building, and yet so located as to be accessible to the students at the University Medical School.

Of course, it would be impossible to locate a hospital of this size and provide the necessary ground site on the Campus. There is not enough land at the disposal of the Regents to make this attractive offer. The Executive Committee of the Alumni Association will be asked to consider this matter at the earliest possible moment, and report to the Board of Regents their decision, and induce them to provide a site somewhere, together with Minneapolis, that would be accessible for University instruction purposes.

This hospital is a pure charity. There is no question of minimum or maximum fees, or private rooms at low rates or high rates. It is a charity which will extend its mantle over the entire United States. It is also to be supported as a charity hospital by the Shriners. This means that they will probably be assessed a small sum of money each year per capita for the maintenance of this large charitable institution. It is to be hoped that all medical men will take an active interest in this proposition and see if the hospital cannot be located here, not only for the benefit of Minneapolis but for the benefit of the Medical School.

THE MINNESOTA STATE BOARD OF HEALTH AND THE ENFORCEMENT OF STATE HEALTH LAWS

The Minnesota State Board of Health has been active during the past three months in the enforcement of its regulations by means of criminal prosecutions for violations. A number of individuals guilty of delinquency in treatment have been prosecuted in the municipal courts of St. Paul and Minneapolis and committted to the work-houses of these cities.

This is a more or less routine procedure, but, in addition, the Board has had several successful prosecutions for violations by persons professionally in contact with these cases.

During October two druggists were successfully prosecuted in St. Paul for selling venereal-disease remedies without prescriptions, and each was fined $10 and costs. One complaint was filed against a Minneapolis druggist at approximately the same time, but on account of a technical error in the manner of drawing the complaint it was found necessary to dismiss this case. It is planned to secure further evidence and file a new complaint. One of the large chain drug stores has been a frequent violator of this regulation.

In November a physician was prosecuted in Minneapolis for failure to report cases of venereal disease treated by him and was fined $20 and costs. In December another physician was prosecuted in Minneapolis on the same charge, and was fined $50 and costs.

Reputable physicians and druggists observe the law scrupulously.

BOOK NOTICES

The Duodenal Tube and Its Possibilities. By Max Einhorn, M. D., Professor of Medicine at the New York Post graduate Medical School; Visiting Physician to the Lenox Hill Hospital, New York City. Octavo of 122 pages with 51 illustrations. Philadelphia and London. W. B. Saunders Company, 1920. Cloth, $2.50 net.

In this book Dr. Einhorn discusses the duodenal tube and its use, both in diagnosis and treatment. The various types of tubes are described, and the analysis of the duodenal contents is taken up in detail.

Of especial interest are the chapters upon its diagnostic and therapeutic value. Under the former the use of the tube in diagnosis of pathological conditions in the liver, gall-bladder, and pancreas is treated in detail. In the section upon therapeutic value the methods of duodenal ailmentation are fully described.

It is to be regretted that the examination of the bile pigments for urobilin and urobilinogen and their relationship to the anemias have been omitted.

Donald McCarthy, M. D.

Mental Diseases: A Handbook Dealing With Diagnosis and Classification. By Walter Vose Gulick, M. D., Assistant Superintendent Western State Hospital. Cloth. Price, $2. Pp. 142, with illustrations. St. Louis: C. V. Mosby Company, 1918.

This exceedingly handy and readable volume of scant

140 pages by Walter Vose Gulick, of the Western State Hospital, Washington, is a distinct achievement in its particular field.

Most works dealing with insanity are so discursive and so highly involved in classification and detail of context that whatever they may contain of valuable material is buried so deep as to be of small value to the reader, whether he is specializing in the subject or not.

The classification the author presents in his first chapter, probably the best at present in use, is still subject to decided criticism, as being too long and with altogether too many divisions and sub-divisions. It is, however, that of the American Medico-Psychological Association.

The material grouped in the book's various chapters is finely chosen, and well presented, clearly, comprehensively, and illustrated by numerous characteristic cases.

In this busy age possibly the greatest single merit that medical writing can possess, is brevity, even sometimes at the expense of detailed completeness. This book is most admirably brief and to be specially commended for this merit, and at the same time it includes the real essentials of the subject.

It ought to be in the working library of every medical practitioner. LEO M. CRAFTS, M. D.

MEDICAL CLINICS OF NORTH AMERICA. September, 1920. Volume 4, No. 2, Boston Number. Philadelphia and London: W. B. Saunders Company. Six numbers per year; paper, $12.00; cloth, $16.00.

Anyone interested in internal medicine or pediatrics will find much of interest and profit in this number from the Boston clinics.

Among the pediatrical articles Dr. Stanley Cobb discusses spastic paralysis in children, and presents several illustrative cases. Dr. Maynard Ladd writes upon vomiting as a symptom in childhood, with a plea that more attention should be paid to it than is usually the case. The Children's Hospital is well represented by Dr. John Lovett Morse in his consideration of constipation and eczema in an infant from an excess of fat in modified milk; Dr. Louis Webb Hill on congenital atelectasis and bronchial tetany; Dr. Edwin T. Wyman, who reports two cases of acquired heart disease in childhood; and Dr. Karlton G. Percy, who considers 33 cases of chronic intestinal indigestion from starch. Dr. Jos. I. Grover discusses enuresis and Dr. Philip H. Sylvestor presents a case for diagnosis showing unusual features, with a very complete differential diagnosis and discussion.

For those more interested in adult medicine, Dr. E. H. Nichols presents some suggestions regarding the early diagnosis of appendicitis. Drs. Paul B. Wright and Wm. D. Reid discuss the diagnosis of mitral stenosis with a discussion of the murmurs, both typical and atypical. Dr. Franklin W. White takes up the modern examination of the stomach, emphasizing the view that modern gastric examination and diagnosis should be the mature summing up and co-relation of all of our various methods rather than reliance upon any one method, as for example, the Röntgen examination or a gastric analysis. Dr. Franklin Berry presents an analysis of 400 autopsies upon cases of lobar pneumonia; and an analysis of 117 cases of cirrhosis of the liver, with jaundice and ascites is presented by Dr. H. Archibald Nissen. Dr. Edwin A. Locke discusses empyema complicating pneumonia, emphasizing the differentiation between streptococcic and pneumococcic lesions.

Other papers are presented by Dr. W. H. Robey on aneurysm of the descending aorta; Dr. Albert A. Horner on encephalitis; Dr. M. J. English, an atypical case of pneumonia. Dr. W. R. Ohler discusses the various tests of renal function and their clinical application. DONALD MCCARTHY, M. D.

PRACTICAL PREVENTIVE MEDICINE. By Mark F. Boyd, M. D., C. P. H., Professor of Bacteriology and Preventive Medicine in the Medical Department of the University of Texas. Octavo volume of 352 pages with 135 illustrations. Philadelphia and London: W. B. Saunders Company, 1920. Cloth, $4.00 net.

The purpose of this compact volume as expressed by the author is to introduce the student to public health literature and to call the attention of the physician to public health responsibilities and opportunities.

In the section on epidemiology he outlines the cause, transmission, and methods of control of each of the transmissible diseases, and discusses concisely, but fully, the general measures of disease control, such as sewage disposal, disinfection, production and inspection of milk, and purification of water. The chapter on diseases carried by insects and animals is especially interesting.

The section on food considers the means of preserving, selling, and cooking the ordinary food-stuffs, as well as means of preventing the deficiency diseases.

The accidents, diseases, and intoxications of the various occupations are tabulated and illustrated by photographs.

Diseases arising from the puerperal state, especially puerperal septicemia, are shown to be more numerous in the United States than in any other country with two exceptions. The registration and control of midwives, and the maintenance of maternity clinics, are advocated as means of preventing these deaths.

Under the subject of heat and ventilation, the human body is likened to a furnace, a radiator, a thermostat, and a humidifier. Temperature and humidity are the most important factors in ventilation. Carbon dioxide percentage is not a guide to the fitness of air for breathing. When and how to build a home, and the matters of personal hygiene,—bathing, sleeping, and exercising,—are outlined interestingly, if sketchily.

The chapters are short and to the point; the headings are lettered or numbered, giving an appearance of order and sequence. References are given at the end of each chapter; and the book is interesting and easy to read.

OLGA S. HANSEN, M. D.

NEWS ITEMS

Dr. J. W. Doyle, of Minneapolis, has located at Hill City.

Dr. C. W. Tinker has moved from Stewart to Long Beach, Calif.

Dr. Ira Leslie Edmunds, of Clearwater, died last month at the age of 61.

Dr. D. V. Overton has moved from Sioux Falls, S. D., to Platte, S. D.

Dr. L. G. Wilberton, of Winona, was married last month to Miss Augusta C. Seyfried, of St. Paul.

Dr. Albert M. Snell, of Mankato, was married on January 2d to Miss Eleanor K. Shea, of Eveleth.

Dr. G. H. Dahl, of Mankato, has been doing postgraduate work in Chicago, specializing in obstetrical work.

Dr. W. W. Nutting, of Bowman, N. D., has purchased the hospital at Marmarth, and will devote part of his time to it, but will reside in Bowman.

Dr. S. H. French, of Milaca, has purchased the practice of Dr. A. W. Hanson, of Grove City. Dr. Hanson has moved to California on account of his wife's health.

Dr. H. P. Ritchie, of St. Paul, will give the principal paper before the Upper Mississippi Valley Medical Society at its annual meeting at Brainerd next week.

Dr. H. B. Wenz has resumed practice at Verona, N. D., after an absence of over three years in army service. He attained the rank of captain, and was mustered out last month.

We recently noted the return of Dr. A. E. Hofer to Marion, S. D., from Poland. Dr. Hofer brought to this country several orphans and old people, and located them in South Dakota.

The lease of Asbury Hospital of Minneapolis to the U. S. Public Health Service for the use of disabled service men, has been signed, and possession of the hospital will be given soon.

Dr. Clyde A. Undine, of Minneapolis, was married last month to Miss Effie Heighstedt, also of Minneapolis. Both Dr. and Mrs. Undine are graduates of the University of Minnesota.

Dr. Harry P. Ritchie, of St. Paul, was elected secretary of the Minnesota Academy of Medicine to fill the vacancy caused by the resignation of Dr. Frederick Leavitt at the Academy's last meeting.

The Minnesota State Board of Health will need slightly over one thousand dollars a day for every day in the next two years, according to the budget prepared for the legislature. It is worth it, for it pays.

The new Aberdeen (S. D.) Hospital will maintain a nurses' training school, and the work will be done under conditions so attractive that the applications for the course should exceed the capacity of the hospital.

Dr. P. H. Blonge, of Elmore, has sold his hospital and practice to Drs. Erickson and Silvernale, and will move to California. Dr. Silvernale is a recent graduate of the University of Minnesota Medical School.

An eye, ear, nose and throat clinic is to be opened by the U. S. Public Health Service in Minneapolis to take care of this work among the service men in the Northwest. A dental clinic has just been opened.

The Clay-Becker County Society held its annual meeting at Moorhead last month, when the following officers were elected: President, Dr. B. T. Bottolfson, Moorhead; secretary-treasurer, Dr. O. Larson, Detroit.

The recent addition of thirty beds to the capacity of the Swedish Hospital of Minneapolis, gives that hospital much relief, especially as it provided room for a new maternity ward. The present capacity of the hospital is 250 beds.

Dr. F. E. Harrington, Health Commissioner of Minneapolis, who was "borrowed" for a year from the Surgeon General of the United States, has had his leave of absence extended another year, and probably will remain in his present position.

After a long and very bitter controversy, into which the physicians of the city were drawn, Dr. Mabel Ulrich's re-appointment, by the mayor, as a member of the Minneapolis Board of Welfare was confirmed by the city council by a vote of 17 to 6.

The Rosebud County (Mont.) Hospital building will be completed next month. It is located at Forsyth, has thirty-two beds, and will cost over one hundred thousand dollars. It will be conducted by the Deaconesses of the Methodist Episcopal Church.

The physicians composing the Children's Clinic of Minneapolis have moved from the Syndicate Block to the Children's Pavilion of the Abbott Hospital. The members of the Clinic are Drs. F. C. Rodda, N. O. Pearce, Rood Taylor, M. D. Ott and E. F. Robb.

Winona County (Minn.) may join Wabasha County in the maintenance of a tuberculosis sanatorium. The former county has no sanatorium, while the latter has an excellent one, Buena Vista, of which Dr. Ernest Strader, of Louisville, Ky., has been appointed superintendent.

The Sioux Valley Eye and Ear Academy, composed, in the main, of specialists of South Dakota, Iowa, and Nebraska, holds its midwinter

meeting in Sioux City, Iowa, on January 19th. Dr. J. A. Hohf, of Yankton, S. D., is the only South Dakota physician upon the program of this meeting.

A million-dollar hospital with a quarter-million-dollar annual endowment, if needed, is possible for Minnesota. The Shriners will build and endow such a hospital for crippled children, and it will be located in the Middle West. The Minnesota Shriners will ask for the hospital for Minnesota.

Dr. Frederick R. Mosse, of Rochester, died on December 26th at the age of 63. Dr. Mosse graduated from Chicago Homeopathic Medical College in 1877, and came at once to Rochester, where he practiced till the day of his death. He was a highly esteemed citizen of Rochester for nearly fifty years.

Five physicians of Willmar have formed the Willmar Hospital and Clinic group, composed of the following: Drs. J. B. and A. F. Branton, Dr. C. J. Ehrenberg, Dr. P. C. Davidson and Dr. E. H. Frost. The Davidson Hospital will be remodelled and converted into offices for the group, and the Willmar Hospital will be used exclusively for patient rooms with fifty or more beds.

Dr. Henry Helmholz, of Chicago, has gone to Rochester as Professor of Pediatrics in the Mayo Foundation and Head of the Section on Pediatrics in the Mayo Clinic. Since returning from two years of graduate study in Berlin and Breslau, Dr. Helmholz has been Assistant Professor of Pediatrics in Rush Medical School and Chief of Medicine in the Children's Memorial Hospital, Chicago.

As this issue of THE JOURNAL-LANCET is going to press the Ramsey County physicians are conducting their first Clinic Week in St. Paul. A beautifully printed general program has been sent out, giving, in the main, the members of the hospital staffs in the city and their departments of work. If the beautiful weather of the past few weeks continues the number of visitors will be largely increased and their enjoyment equally enhanced.

The Minnesota Alumni Weekly of January 6 contains a letter from Dean E. P. Lyon of the Medical School, to Regent Sommers of the University, summarizing and answering the criticisms contained in the report of the Medical Alumni Association on the School. The letter is composed of sixteen separate "Criticisms" and "Answers." The summaries of the criticisms are entirely fair; the answers, apparently, have no tendency to allay the criticisms of the Alumni.

At the annual meeting of the Hennepin County Medical Society, held last week, the following were elected officers for 1921: President, Dr. George Douglas Head; first vice-president, Dr. John Butler; second vice-president, Dr. F. L. Adair; secretary-treasurer, Dr. R. T. LaVake; librarian, Dr. F. L. Adair; executive committee, Dr. Geo. D. Haggard, Dr. A. E. Benjamin, Dr. E. K. Green, Dr. W. R. Murray, Dr. J. F. Corbett, and Dr. J. S. Reynolds; board of trustees, Dr. A. W. Abbott, Dr. W. A. Jones, Dr. J. W. Bell, Dr. C. A. Donaldson, Dr. H. H. Kimball, Dr. J. G. Cross.

INSTRUMENTS FOR SALE

A brand new Spencer microscope complete; oil emersion, set of stains, slides, etc. Book on laboratory technic. Microscope has been used two or three times. Also an L. C. Smith typewriter. Will sell both for $170 cash. Will pack and guarantee delivery. Address 106, care of this office.

PRACTICE FOR SALE

In eastern North Dakota, unopposed $6,000 practice in up-to-date town of 500; best farming section of state; good schools and churches. Collections good; railroad and county appointments transferable; moderate investment. Address 105, care of this office.

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Space in the Physicians and Surgeons Building, Ninth and Nicollet; approximately 1,200 square feet. Will rent whole or part at low rental. Apply to Custodian of building, room 224.

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In a town of two hundred population. Excellent territory. Nearest doctor seven miles. Scandinavian preferred. Address Clay County State Bank, Hitterdal, Minn.

PRACTICE FOR SALE

Am leaving a $10,000 practice in richest farming section of Southern Minnesota to locate in the city. Unopposed; collections, 95 per cent. House and office for sale on easy terms. Deal must be completed in a few weeks. Address No. 101, care of this office.

LOCATION WANTED

By a competent physician with fourteen years' experience in general and surgical practice, and long postgraduate courses in surgery. Hospital town preferred. Best of references given and expected. Will make moderate investment if required. Address 103, care of this office.

TO THE MEDICAL PROFESSION

THE NATIONAL PATHOLOGICAL LABORATORIES OF CHICAGO, ST. LOUIS, DETROIT, AND NEW YORK are Diagnostic Institutions, ideal in equipment and personnel.

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Benzyl benzoate has been extensively studied by Dr. Macht of Johns Hopkins, who has contributed numerous papers on the subject to the leading medical journals.

This drug is an analgesic and antispasmodic, and is non-narcotic and non-toxic, and is well borne by the stomach. It is useful in many specific conditions hitherto calling for the use of morphine, and, fortunately, it is safe from bad after-effects.

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The therapeutic value of the oil emulsions is more generally recognized today than at any time in the past in spite of some of the exaggerated claims made for cod-liver and other oils by some manufacturers. The profession now knows as it should the real value of these products.

Angier's Emulsion stands high in the estimation of the best investigators, and has the confidence of medical men everywhere. It is particularly desirable where an oil diet is called for because it is very grateful to the stomach, causing no digestive disturbance to young or old patients. The Angier Chemical Company of Boston will send free samples upon request.

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This instrument costs but $175, and is sold by the N. P. Benson Optical Company of Minneapolis, Duluth and Aberdeen (S. D.), at which places it can be seen and will be demonstrated, or a booklet of the instrument will be sent to anyone asking for it.

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No treatment of the above-named diseases is complete until the habit is destroyed and the toxemias resulting from the habit are corrected. Then results can be accomplished, but they can be accomplished only in a hospital or institution and as the result of highly scientific management.

The Hygeia Hospital Service, of Chicago, offers such service, and Dr. Wm. K. McLaughlin, the superintendent, is recognized as offering patients a service that will command the commendation of physicians everywhere. Dr. McLaughlin invites correspondence from physicians.

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THE ABERDEEN CLINIC AND LINCOLN HOSPITAL

The completion of the fine Lincoln Hospital building, the property of the Aberdeen Clinic, is an event full of significance, for it marks an era in medical progress in the Northwest. In no city, East or West, of the size of Aberdeen, S. D., can two finer structures be found in the hands of private practitioners, and we congratulate the people of South Dakota and of adjoining states that such an undertaking has been made possible by the prosperity of that state and section.

The pictures of the two handsome structures, seen on another page, tell an interesting story. The new hospital building has sixty-four rooms with private toilets and an unusual number of rooms with private baths.

Every department of Hospital and the Clinic is provided with modern appliances built for the comfort of patients and the successful work of physicians and surgeons.

The staff, though not large, is made up of very able men; and the entire enterprise has before it an honorable and successful future. The whole Northwestern profession wishes the staff godspeed.

TWO SUCCESSFUL SANITARIUMS

Dr. J. E. Crewe, of Rochester, Minn., conducts two sanitariums in an unusually successful manner. They are entirely distinct from each other, but they get results because their methods are specific, and these methods have attracted wide attention.

In the Crewe Sanitarium tuberculous patients are treated by intensive methods that give striking results; and in the Cascade Sanitarium only patients with chronic diseases of metabolism are treated. Here the methods are dietetic and hygienic, and the results are very remarkable.

Reprints of Dr. Crewe's articles on his work published in various medical journals will be sent to any physician asking for them, and they furnish valuable reading.

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Messrs. Fairchild Bros. & Foster, of New York, have furnished the medical profession digestants for all or more than half of a century, and during all this time their laboratory has dealt with this vital and difficult problem. They believe that they have in their "Gastron" the most satisfactory aid to digestion that has come from the laboratory.

Gastron is "stored-up energy extracted directly from the stomach gland-cells," of course, of animals, and aids human digestion, when, unaided, the natural digestion comes at a cost of energy too high for the system to pay. It so preserves the energy of the sick stomach that the patient is carried over many a crisis, and restored to health.

Gastron is, in short, an aid to Nature, such as the physician is supposed to find when most needed.

FATAL CASES OF MENINGITIS WITH GLYCOSURIA AND NORMAL PANCREAS

Masary reports three cases of fatal cerebrospinal meningitis characterized by a constantly increasing percentage of glycosuria. The autopsies all showed inflammation of the third and fourth ventricle, together with the typical lesions of cerebrospinal meningitis. In all three cases the pancreas and other organs were normal. Masary suggests that glycosuria in cases of cerebrospinal meningitis should suggest invasion of the third and fourth ventricles. (Bull. de l'Acad. de Med. de Paris, June 10, 1919.)

OCONOMOWOC HEALTH RESORT

A good many years ago the attention of the American people was called to Wisconsin and Minnesota as possessing a climate and lake regions remarkably favorable for health resorts. As the Wisconsin lake regions were more accessible from Chicago, the gateway to these regions at that time, Wisconsin became the mecca for thousands upon thousands of sick people from the East. This led to the establishment of a large number of sanatoriums of various kinds in the lake regions near Milwaukee, then, as today, a large city.

This movement finally resulted in the establishment of special institutions and attracted specialists of renown. One of the most notable and most successful of these is the Oconomowoc Health Resort for nervous and mild mental cases, under the charge of a very able man as resident physician, Dr. Arthur W. Rogers. In buildings, equipment, environment, and personnel, few, if any, such institutions in America or even abroad excel the Oconomowoc Health Resort.

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When a solution of a local anesthetic is injected into a tissue its effect is limited by the rapid dispersion of the fluid; that is, the fluid is absorbed and carried off by the circulation, and the anesthesia is of short duration. True, the surgeon can control this condition when operating upon an extremity, as a finger, by throwing a ligature around the member, but even that procedure is open to objection.

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This subject is dealt with more at length in the advertising section, where the reader will find the fifth of the series of short articles on Adrenalin to which we have had occasion to refer in previous issues of this journal. A perusal of the article and its preservation for future reference are suggested.

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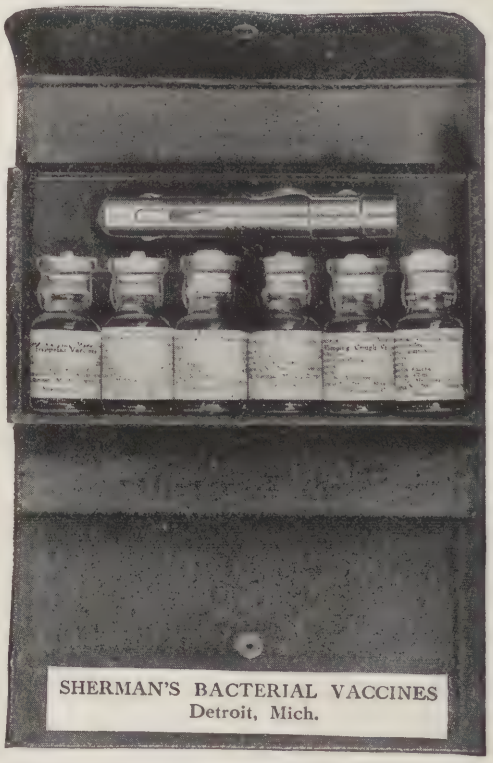
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The literature of the products is well worth reading and can be had from any of the houses of the firm, which are located in Kansas City, Atlanta, Denver and Chicago.

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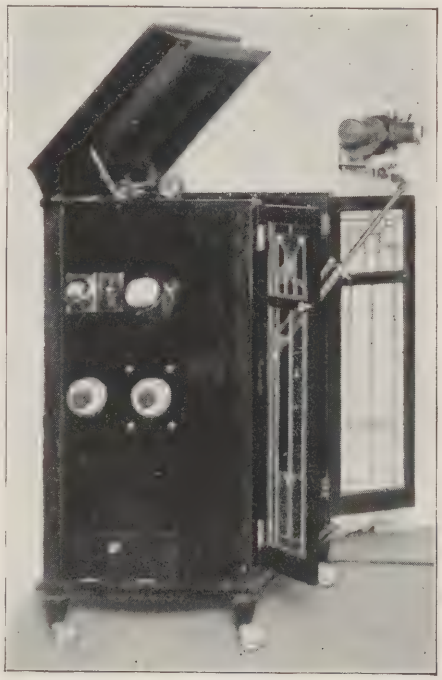
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SYMPOSIUM ON THE PNEUMONIAS*

W. P. LARSON, M. D., University Medical School
J. S. GILFILLAN, M. D., Saint Paul
L. A. NIPPERT, M. D., Minneapolis

THE BACTERIOLOGIC AND IMMUNOLOGIC ASPECTS OF PNEUMONIA

BY W. P. LARSON, M. D.
MINNEAPOLIS

In discussing the bacteriology of pneumonia I must say, at the outset, that there is but little to report that is entirely new, and yet observations are being made constantly which help, in a measure, to clarify the complex problems of infections of the lung. The bacteria responsible for pneumonic infections are the pneumococcus, the streptococcus, the Friedlander bacillus, the staphylococcus, and certain strains of the paratyphoid bacilli. Of these the pneumococci cause from 80 to 90 per cent of pneumonia.

This is not surprising when consideration is given to the distribution of the pneumococci. It has been shown by various investigators that more than 30 per cent of normal individuals harbor these organisms in the mouth and respiratory passages. This may be demonstrated by injecting white mice with saliva or mucus from the nasal passages of normal individuals. White mice, being very sensitive to pneumococci, succumb to the infection in from twelve to thirty hours, when the organism may be isolated from the heart's blood in pure culture.

The same technic should be followed in studying the bacteria in pneumonic sputum. Too often a diagnosis of pneumococci is attempted by mere microscopic examination. Diagnosis based upon morphologic characters alone should never be attempted, since it so often leads to erroneous conclusions.

The characters upon which a diagnosis of the pneumococcus may be made are gram-positive diplococcus, lancet-shaped, capsule formation when grown in animal experiment, and its ability to ferment inulin, the latter being important in distinguishing it from the streptococcus.

So much has been written in recent years on the types and typing of pneumococci that discussion of this subject at this time would seem unnecessary. In the interest of context, however, we shall mention, very briefly, the points of importance in the matter of typing pneumococci.

Neufeld and Handel found that not all strains of pneumococci would be agglutinated by a serum prepared against a single strain of this microorganism. In studying the problem further it was found by Cole that there were four distinct

*Presented before the Hennepin County Medical Society, Minneapolis, December 6, 1920.

types of pneumococci, only two of which produced agglutinating serum when injected into animals. These two strains, he showed, were invariably agglutinated by homologous, but never by heterologous, serums.

The two strains were then called pneumococci Types I and II, respectively. Type III constitutes the organism which, up to that time, had been known by the name *streptotoccus mucosus* and recognized by its mucoid growth. Pneumococcus Type IV is not agglutinated by any group serum, not even one prepared with Type IV strains.

In the practical work of typing pneumococci then, any pneumococcus which is not agglutinated by Serums I or II, and which does not present a mucoid growth would be thrown into the Type IV group.

Later work was successful in developing an agglutinating serum for Type III, so now we possess specific agglutinating serums against Types I, II, and III, with which we are enabled to identify these three types of the pneumococcus, while such as are not agglutinated by any of the three serums are classed as Type IV. The anti-pneumococcic serums do not agglutinate in high dilutions, not showing any agglutination, as a rule, in dilutions higher than 1-10 or 1-20. In contrast to these we have serums against typhoid and paratyphoid bacilli which agglutinate in dilutions to 1-10,000,000.

In practice the typing of pneumococci is carried out by injecting sputum into white mice intraperitoneally. Four to five hours later, when the mice are very ill as a result of the infection, they are killed, and the peritoneal cavity washed with sterile salt solution thereby obtaining the organisms in suspension. This is then centrifuged, the sedimented bacteria resuspended in fresh salt solution, and divided into three portions, and to each portion is added an equal volume of the three serums, respectively. They are then incubated for two or more hours at 37°, when the result may be read. With the aid of the agglutination tests Cole found that the four types or groups of pneumococci were responsible for pneumonias in the following percentages: I, 47 per cent; II, 18 per cent; III, 13 per cent; and IV, 22 per cent.

Furthermore, the mortality of the various types of infection could be determined, which was found to be as follows: I, 26 per cent; II, 28 per cent; III, 80 per cent; and IV, 25 per cent.

The type and mortality incidence varies somewhat from time to time and with the locality. Mathers, studying a series of pneumonias at the Cook County Hospital, found Type III in only 4 per cent of his cases as against 13 per cent reported from the Rockefeller Hospital.

One of the most striking peculiarities of pneumococcic infections in man is the fact that agglutinines can seldom be demonstrated in the blood either during the stage of active infection or during the period of convalescence. In a series of cases studied by the late R. Weil it was found that agglutinins occasionally appeared in the blood for a very brief period—a matter of two or three days—at the time of the crisis, and could be demonstrated only when concentrated serum was used. This is in complete accord with the universal experience of clinicians, that an attack of pneumonia does not protect against subsequent infections. In fact, the opinion is quite general among laymen that one attack of pneumonia predisposes to later infections, an opinion which is shared to a large extent by medical men. There are, however, no experimental data that would support that viewpoint. I am inclined to attempt an explanation of the multiple attacks of pneumonia on the basis of the individual variations in ability to react against certain antigens. In this connection we may call attention to the wide variation among horses in their reaction to diphtheritic toxins. In the production of diphtheritic antitoxin at the large commercial houses it has been found that a certain percentage of the animals fail to react to the injections of toxin, and therefore cannot be used for the production of antitoxin. Again, in using rabbits for the production of lysins against sheep blood-cells, about 10 to 15 per cent of the rabbits fail to develop satisfactory immunologic response.

Likewise, the human race responds only feebly to pneumococcic antigen, a fact which is reflected in the mortality tables of our large insurance companies. While the human family is peculiarly susceptible to the pneumococcus we find that certain races are much more susceptible than others. The aboriginee of South Africa is known to possess far less natural resistance to these infections than the European. This is particularly true of some of the inland tribes who live in localities where pneumococci are unknown. When these people are transferred to localities where pneumonia prevails the mortality among

them is much higher than among those who have lived there for generations. This observation suggests the possibility of developing a racial resistance to the pneumococcus, relatively speaking. In the animal kingdom we find a wide variation in regard to susceptibility to pneumoccocic infections. The white mouse, on the one hand, presents no resistance whatever, while the pigeon, on the other hand, presents an immunity that is absolute. Between these two extremes we have animals presenting all gradations of susceptibility and immunity. It would seem, therefore, that a careful study of these various animals might throw some light on the question of the mechanism of the susceptibility and immunity to the organisms under consideration.

In order to avoid tiresome details of technic I may briefly state that the blood serum of an animal immune to the pneumococcus will not always kill the organisms when allowed to act upon it in vitro, while the whole blood of the immune animal destroys the micro-organism promptly under the same conditions.

If we place a culture of the pneumococcus in a capillary tube with the blood of a mouse, on the one hand, and with that of a pigeon, on the other, incubate the two for a few hours, after which they are examined culturally, it will be found that the micro-organisms have developed in the blood of the mouse, while they will have been destroyed in the blood of the pigeon. This may be regarded as a fairly reliable test to determine the resistance of an individual toward a given germ. The work of Metschnikoff more than twenty years ago suggested this experiment, which has been developed in detail more recently by Wright.

It follows from the above experiments that whole blood possesses bactericidal properties which the serum alone does not possess. Solis-Cohen recommends this test, which he calls the Heist-Tracy test, highly for determining the resistance of an individual toward the various types of pneumococci, and, further, to determine the resistance acquired by an individual during the process of vaccination. The bactericidal properties of the whole blood, as shown by Wright and associates, appears to promise much in the way of determining the resistance of an individual to the pneumococci. These investigators have found that the bactericidal properties of whole blood are markedly increased against pneumococci by vaccination. This test then removes much of the speculation in regard to the value of prophylactic vaccination against pneumonia. The susceptibility of an individual for each type of pneumococci may be determined, and proper vaccination prescribed.

The first to use prophylactic vaccination against pneumonia was Sir Almoth Wright working with natives in the mining districts of South Africa. Wright calls attention to the fact that the natives are more susceptible to pneumonia than the European, and are also more sluggish to react to pneumococcic vaccine. During the year 1912-13 he vaccinated 17,431 individuals against pneumococci, reserving 6,771 as controls. During that year the pneumonia incidence in the inoculated was 2.16 per cent, while that in the uninoculated was 5.19 per cent. The magnitude of the experiment and the condtions for observation under which it was carried out leave no room for doubt as regards the value of prophylactic vaccination.

Not only was the pneumonia incidence reduced in a proportion of 2 to 1 in favor of the inoculated, but the death-rate from pneumonia was reduced 60 per cent among the vaccinated men.

Cecil and Austin were among the first to practice prophylactic vaccination on a large scale in this country. These investigators vaccinated 12,519 soldiers with a mixed vaccine composed of Type I, II, and III pneumococci, 20,000 additional troops serving as controls. Cecil and Austin were able to observe the troops only about ten weeks, as at the end of that time they were transferred and no further record could be kept. The results were decidedly in favor of vaccination since the pneumonia incidence, as well as the mortality incidence, was much lower in the inoculated men.

The work of the English investigators, as well as that of American scientists, seems to dispel any doubt that may have existed in regard to the value of prophylactic vaccination against pneumonia.

The next question that arises is as to the time duration of such prophylactic inoculation. It is important to know whether immunity following vaccination against pneumonia, typhoid fever, or Asiatic cholera, or other diseases, is permanent or only temporary. It is probably too early at this date to pass final judgment on the duration of pneumococcic immunity. The method is as yet too new. It is only now, after several years of experience, that we are gaining some definite idea as to the permanency of the immunity obtained by antityphoid vaccination. There is evidence that the protection gained from antityphoid vaccination is of about one year's duration. Since the pneumococcic antigen is so much inferior to

the typhoid antigen it is probable that the protection in the case of vaccination against pneumonia is of much shorter duration. In analyzing the table of Wright and his co-workers we are led to believe that the protection is of about four months' duration; namely, the four months immediately following vaccination, although there appears to be some protection over a period of about one year or during the time Wright had his men under observation.

Undoubtedly, in this connection the method of administering the vaccine is of prime importance. There is a tendency to underimmunize where vaccination is carried out on a large scale. During the war period short-cut methods of immunization against typhoid and paratyphoid infection were developed. At that time we heard much of the so-called lipovaccine. This was nothing more nor less than the typhoid and paratyphoid bacilli emulsified in oil. The advantages claimed for the lipovaccine were, that bacteria suspended in oil would not be absorbed as readily as when water was used as the suspension fluid, and, consequently, larger doses could be given at one time without harmful effects. It was claimed, further, for the lipovaccine that by giving such overdoses of the antigen a single dose would produce the immunity. The lipovaccines, we believe, have not fulfilled theoretical expectations. I do not believe we can consider it proven that oil retards the absorption of the organisms appreciably. Furthermore, we know of no type of immunity that can be effected by a single stimulus. In order to get the highest type of immunization repeated stimuli are necessary. It has been stated that an epidemic of typhoid fever did break out among some of our troops in camp in Great Britain. If information is correct, these men had been treated with the lipovaccine, and probably, therefore, were not as effectively immunized as by the old and slow method.

Another point in the preparation of vaccines that the medical profession has been slow in recognizing is the necessity of using an absolutely fresh product. Bacteria, although killed, continue self-digestion, commonly called *autolysis*. It is a fundamental law in immunology that an antigen that has undergone even partial digestion has lost its ability to stimulate antibody-formation. As an illustration of this point, we may cite the fact that egg albumin when injected into an animal stimulates the formation of antibodies against the protein. However, if the egg albumin is first mixed with trypsin and allowed to digest for a short time in the incubator it will have lost its antigenic properties. Just so with bacterial vaccine, when autolysed their immunizing properties are lost in direct proportion to the degree of autolysis. Therein lies the secret of autogenous vaccines. I believe the advantage of an autogenous vaccine over a stock vaccine lies as much in the fact that it is absolutely fresh as that it is of the identical strain. Huenekens was the first to emphasize this point, the importance of which is coming to be quite generally recognized.

FOR DISCUSSION SEE PAGE 68

THE SPECIFIC TREATMENT OF LOBAR PNEUMONIA

By J. S. Gilfillan, M.D.
SAINT PAUL

The specific treatment of lobar pneumonia is by no means new. For thirty years various sera and vaccines have been used. While in laboratory animals it may be shown that these possess a decided protective or curative action, in pneumonia in man the results are more difficult to demonstrate.

In 1891, after the protective power of immune serum had been shown by animal experiment by many investigators, Foa and Carbono first reported its use in man. During the following few years many investigators used various sera, and in 1904 Marekovszky collected the reported results up to that date. F. and G. Klemperer, in 1891 and 1892, reported 18 cases with good results, and thought that the serum had a decided antitoxic action. De Renzi of Naples had such good results in 16 cases that he says the problem of treatment of pneumona is solved.

Pane, in De Renzi's clinic (23 cases), says that by timely use of the proper dose every case may be saved. Fanoni considered Pane's serum a specific.

Goldsborough (*Jour. A. M. A.*, 1902) speaks highly of the serum treatment. He collected 386 cases with a mortality of 16.5 per cent, which he compares to that of 25 to 35 per cent common to the best American hospitals.

Many others report small series of cases, and are usually favorably impressed with this method of treatment. Banti, however, in 21 cases saw no favorable results.

In 1904, Anders collected 535 cases treated with antitoxic serum and concluded that the results did not warrant its use.

Loomis, in an article on the treatment of pneumonia, in 1906, did not mention this treatment. West, British Med. Jour., 1908, says there is no hope from antitoxin, and Russell in the same year says there is no specific treatment. Hare, in 1911, says the same. At this time reports are fewer; vaccines were tried, but did not attract a great deal of notice.

In 1912, in Germany especially, renewed interest was manifested. It was found that the antitoxin did not obey the law of multiples, that, while a large dose had often a decided effect, a smaller dose might have none whatever, consequently large doses were given, frequently intravenously instead of hypodermically.

In 1912, Rosenow reported cases treated by the injection of autolyzed pneumococci with favorable results, and in 1913 Rosenow and Hektoen reported a considerable series extending over three years. Alternate cases in the Cook County Hospital were treated by injection. This series comprised 224 cases, the mortality in the treated series being 23.3 per cent, in the untreated 37.8 per cent.

In 1913, Rufus Cole of New York read a paper at the meeting of the A. M. A. in Minneapolis, from which dates our modern serum treatment of pneumonia. It had previously been shown that a serum which protected against one class of pneumococci failed to protect against another class. To overcome this fault polyvalent sera had been tried.

Cole divided pneumococci into four groups: Group I and II, each having a specific immune serum; Group III, none; and Group IV, including various classes not in the other groups. Group I cases comprised 47 per cent; Group II, 18 per cent; III, 13 per cent; and IV, 22 per cent of lobar pneumonia. Against Type I a serum of highly protective power was obtained; against II a slightly less effective one; none against III; and in IV a polyvalent serum would be necessary, which was considered not practicable.

In the treatment of pneumonia by this method the type of pneumococcus was determined by agglutination tests, and, if the case belonged to Group I or II, the corresponding serum was administered. The serum was given intravenously and in doses of from 50 to 100 c.c., repeated every twelve hours, if necessary. In the small series of cases in this report the results seemed satisfactory. The pneumococci, if present in the blood, disappeared after one dose. The course was apparently milder and shorter, and the mortality reduced.

The mode of action of the serum Cole considered doubtful. There was no bactericidal action demonstrated. It seemed probable that the effect was due to antitoxic substances.

In 1917, Cole reported over 500 cases of pneumonia studied in the Rockefeller Institute. The mortality in Group I and II averages 25 to 30 per cent; in Group III over 50 per cent; in Group IV 10 and 15 per cent. It was found that in Group II serum was of no great value. Of the 105 cases of Group I treated with the same serum only 8 died. This would seem to show a considerable reduction in mortality. He found that some of the commercial sera had but little or no protective power. He now advises repeating the dose of 75 to 100 c.c. at intervals of from six to eight hours, and the total amount given in his cases averaged about 250 c.c.

In 1918, Rosenow reported 200 cases treated with his autolyzed pneumococci with a mortality of only 7 per cent. This result excels those obtained by any other method of which I have any knowledge. In cases treated within forty-eight hours of the onset of the disease only 3 per cent died.

Koplik of New York does not use serum. He says that sera and vaccines are "even less successful in children than in adults." Cohen of Philadelphia thinks that serum is of some value. He says that sera and vaccines may some day displace drugs in the treatment of pneumonia, but that that time has not yet come.

From the report of Cole it will be seen that the mortality in all cases of lobar pneumonia due to the pneumococcus is about 27 per cent. By the use of this serum in the class one cases the total mortality is reduced to about 19 per cent. Rosenow by his treatment has a total mortality of 7 per cent in all cases. Judging from the reports the autolyzed pneumococci give by far the best results and obviate the necessity of typing. However, I do not think that we yet have sufficient evidence upon which to base an opinion, and in my judgment the question of specific treatment of lobar pneumonia is still unsettled.

FOR DISCUSSION SEE PAGE 68

PROGNOSIS AND GENERAL MANAGEMENT OF THE PNEUMONIAS*

By L. A. Nippert, M. D.
MINNEAPOLIS

THE PROGNOSIS OF PNEUMONIA

How long shall I be sick? What are my chances? These are the two questions asked of the physician when he has made the diagnosis of pneumonia.

The answer to the first question can be disposed of in a few words: Lobar (frank or croupous) pneumonia limited to one lobe, runs its course in from three to twelve days with an average of nine days, barring extension to other lobes or complications.

The duration of secondary pneumonias, which should include all forms of so-called bronchopneumonias, is dependent on the character and severity of the primary disease, and, therefore, no definite time limit can be given. A satisfactory answer to the second question requires a careful correlation of all the facts obtained through knowledge, acumen, and experience to enable the physician to give a prognosis, not a guess, as to the probable outcome of the disease in the individual patient.

Let me cite two cases: In the second year of my practice I was called to see a man who, according to the message, "felt weak." I found him fully dressed, cap on his head, sitting up in bed. He berated his family for calling the doctor. He had had a slight cough for a few days and felt weak. He was over seventy years old. His respirations were short, fast and jerky; his lips slightly cyanosed; his pulse small, irregular and intermittent. The examination of the lungs, to which he objected, as unnecessary, showed a solid lower lobe. An unfavorable prognosis was given, much to the astonishment and undisguised incredulity of his family. This was at 11 A. M. At 5 P. M. he was dead.

Thirty years later another patient, a woman of 62, was seen. She had a lobar pneumonia with a feeble, irregular heart, a heart which according to her statement had been bad for years. Albuminuria and great dyspnea, aggravated by an immense fibroid tumor of the uterus filling the entire abdominal cavity, added to her distress. The hopelessness of her recovery was so apparent to every one that it was but a perfunctory duty of the physician to express his opinion of the outcome. After four weeks' illness the patient was convalescent. A year later, in spite of the continued damaged condition of her myocardium, she underwent a hysterectomy and left the hospital two weeks later in excellent condition.

The general factors to be considered in forming a prognosis are the following:

1. The type of the patient's constitution, including family tendencies and his general appearance.
2. Age.
3. Sex.
4. The characteristics of any prevailing endemic (epidemic or pandemic).
5. The severity of the systemic infection.
6. The presence of other infectious diseases or chronic debilitating ailments.
7. The extent and location of the pulmonary lesion, and, finally,
8. Complications.

(1.) Fat, flabby, and phlegmatic persons have usually less resistance in acute infections than nervous, active, and not infrequently contrary individuals. A fighting spirit is a great asset in pneumonia, while resignation to, or fear of, a disease erroneously regarded as almost surely fatal, unquestionably diminishes the chances of recovery.

Case—J. F., a vigorous farmer, was taken ill a week before his 60th birthday anniversary. His attitude of hopeless despondency was discovered to have been caused by the statement of a clairvoyant, who told him that he would not survive that date. With dumb resignation he awaited the fatal day. Neither the assurances of his priest nor his physician that his superstition was unfounded had any effect on his state of mind, but when he survived the ominous day his hope returned, although too late, for on the following day the disease extended to another lobe, and he succumbed a few days later.

The writer is convinced that the depressed state of mind of the patient had much to do with the fatal issue.

Whether this attitude of mind or the presence of an inherent or hereditary idiosyncrasy is an explanation why pneumonia in certain families, other things being equal, is apt to prove fatal, the writer is not prepared to say. If the former is the deciding factor Christian Scientists should have a decidedly better chance than those groping in darkness where "truth does not prevail."

Without always being able to find an explana-

*Dr. Nippert contributed to our columns on May 1, 1902, a paper on "The Clinical Features, Diagnosis and Treatment of Pneumonia."—The Editor.

tion why, our experience teaches us to be concerned about a patient who looks bad. Beware of the pale face in pneumonia, as well as in other acute infections.

(2.) Of utmost importance is the age of the patient. According to the statistics compiled by Edwards the mortality between 1 and 5 years is 30 per cent; between 5 and 10 years, 3 per cent; between 70 and 80 years, 87 per cent.

(3.) In women the chances of recovery are 50 per cent less than in men; in the pregnant less than in the non-pregnant.

(4.) Bretonneau, the famous French clinician of the beginning of the 19th century, decided after twenty-three years' practice in the country and in the hospitals of Tours, that scarlet fever hardly deserved the name of a disease. He had not, up that time (1822), seen a single death in his practice. (Almost a century later the writer heard the same claim made regarding pneumonia attributed to a certain treatment.) But two years later, in 1824, the genus epidemicus, heretofore benign, became malignant and after having passed through this epidemic, Trousseau, the great physician of the middle of the past century, tells us, quoting Bretonneau, that "He who looked upon scarlet fever as so mild an affection now learned to dread it as much as the pest, typhus or cholera."

At the present day it is not an uncommon experience to hear the expression, "I would just as leave have smallpox as to be vaccinated," which is not always confined to the laity, but is shared occasionally by a graduate in medicine.

It is true in the past fifteen or twenty years smallpox has been little more than an inconvenient disease in the majority of cases, although the secretary of the local antivaccination league died from it some years ago.

During the epidemic, in 1884, while the writer served as examining physician to the General Hospital of Cincinnati, 900 cases of smallpox were sent to the branch hospital, of which 300, or 33⅓ per cent, died.

In your prognosis, consider the tendency of the genus epidemicus. Even in the sporadic cases the mortality percentage varies in different years from 9 per cent to 27 per cent, according to Eichhorst.

(5.) That the severity of the general infection, the pneumonia bacteremia, is of greatest importance, is self-evident.

(6.) When pneumonia is combined with other infectious diseases, especially with those which involve the structures of the lungs, as influenza or secondary septic bronchitis, the death-rate increases alarmingly.

The outlook for those in whom pneumonia complicates chronic debilitating ailments, especially those of the heart, kidney, and liver, or those of impaired metabolism, such as rheumatism and diabetes, is gloomy, indeed, but the greatest single factor which, year in and year out, has raised the death percentage of pneumonia is alcoholism, acute or chronic. With enforcement of our prohibition laws it does not seem utopian to look forward to a decided decrease in pneumonia fatalities, especially in our larger cities.

(7.) A priori, extension to other lobes not only prolongs the course of the disease but increases the mortality rate.

Pneumonias affecting the upper lobes are more severe than those of the lower lobes, the temperature is higher, and the nervous symptoms, such as delirium or coma, are more pronounced and, finally,

(8.) Complications, such as abscess or gangrene of the lung, pleurisy, empyema, and not infrequently venous thrombosis, add their share to make this disease formidable.

The special symptoms indicating an unfavorable course are as follows:

A prolonged prodromic stage, hyperpyrexia, marked cyanosis, unusual pallor, intense jaundice, pulmonary edema, liquid, brownish, bloody, or grass-green sputa, diffuse bronchitis, pulmonary embolism or infarct, and especially a sudden distension of the stomach.

If, in an adult, the respirations reach 60 per minute, the mortality is 60 per cent; and a pulse-rate of 130 means 50 per cent unfavorable ending. A weakening myocardium as indicated by a diffuse, feeble apex-beat, displaced to the left, with a pulmonary and aortic second sound muffled and indistinct, is most discouraging. One-half of the number of violently delirious patients die. An exception is the occasional post-critical delirium, which, although alarming, is not dangerous. In the writer's experience a high pulse-rate, a low systolic pressure, and a low leucocyte count (below 10,000) means extreme danger.

The striking difference of opinion of men famous for their clinical experience is difficult to understand. Flint, in 1886, and, twenty years later, Struempel, regarded pneumonia almost as Bretonneau considered scarlet fever prior to 1822, while Osler states that pneumonia is the most fatal of acute diseases, out-ranking even consumption in its death-rate.

The writer has no hesitancy in stating that the

pneumonia death-rate in private practice among families who can provide good care for their sick is less than one-half of the accepted average mortality rate of 20 per cent, influenza pneumonia included.

THE GENERAL TREATMENT OF THE PNEUMONIAS

While the specific treatment of pneumonia will be discussed by others more competent than the writer, he desires to state that it is his impression that so far neither the efforts of the Rockefeller Institute nor the products of Rochester have been crowned with success sufficiently convincing to the clinician at large to have faith in the methods proposed.

Although the virulence of its infectiousness is not very great it is advisable to isolate the patient. The sputum and soiled linen must be disinfected. The drainage and surroundings of houses in which pneumonia has occurred at different times should be investigated. Before undergoing a surgical operation, the condition of the nasopharynx should be investigated. During the operation, especially during the pneumonia season, the patient should be carefully guarded against chilling.

There are no specific drugs which will destroy the micro-organisms of pneumonia or their toxins, or favorably influence the course of the disease. Every case of pneumonia presents an individual problem. To support the cardiovascular system until the crisis has been passed, is the chief aim of our treatment. Bodily rest and comfort combined with the stimulating effect of the assurance of recovery are still the chief therapeutic agencies at our command. The former is obtained by careful nursing, the latter by the attitude of the medical attendant. While the writer does not object to have patients who are accustomed to sleeping out-of-doors on the sleeping-porch during their illness, he does protest against the injudicious fad of having every patient, old or young, strong or weak, exposed to currents of air, as one writer states it, in all sorts of weather. In bronchopneumonia, especially of the asthenic types, as in influenza, such practice has done incalculable harm.

Attempts to reduce temperature are futile, but sponging of the body is refreshing and stimulating to the vasomotor system. Our aim to save the strength of the myocardium is best accomplished indirectly by relieving pain, reducing cough, controlling insomnia, and directly by heart stimulants, among which digitalis is still predominant for continuous stimulation, while aromatic spirits of ammonia and the hypodermic use of camphor in oil, are of undoubted value in arousing a failing heart.

In cyanosis as an indication of respiratory insufficiency and not dependent on a failing heart, oxygen may be administered. Barring one instance, the writer has not seen any decided effect from its use.

DISCUSSION OF THE PRECEDING PAPERS

Dr. George Douglas Head (Minneapolis): The papers presented in this symposium upon pneumonia, which we have listened to tonight, bring before us several interesting questions for discussion. In Dr. Larson's paper, reference was made to the statistics published by Dr. Cecil covering the results of his attempts to vaccinate the U. S. army troops against pneumonia at Camp Upton. It was my good fortune to be stationed at Camp Wheeler during the time when Drs. Cecil and Vaughn were making similar studies upon the troops stationed there during the winter of 1918 and 1919. The lipovaccine was used, and only one injection was given. Of the 16,000 men stationed at Camp Wheeler, 80 per cent were vaccinated against Types I, II, and III pneumococcus. Of the 12,800 men so vaccinated, 32 developed pneumonia caused from Types I, II, or III pneumococcus. Of the 3,200 unvaccinated men, 42 developed pneumonia due to Types I, II, and III pneumococcus. A study of these statistics justifies the conclusion that vaccination against Types I, II, and III pneumococcus, while not absolute, is effective against pneumonia caused by one of these types of organism. Furthermore, the mortality in the vaccinated group was 21.7, and in the unvaccinated 22.3, clearly showing that vaccination of healthy individuals against Types I, II, and III pneumococcus does not increase the mortality rate over that present in unvaccinated persons. These and other statistics which have been accumulated from other sources seem to justify the use of vaccine made from Types I, II, and II pneumococcus in the prevention of pneumonia due to these types of pneumococcus. As a therapeutic measure in the treatment of pneumonia, our experience at Camp Wheeler proved the worthlessness of the use of vaccines in the treatment of the disease, as well as the use of all sera except Cole's serum for the treatment of Type I pneumococcus pneumonia, the use of which our experience in about twenty cases seemed to justify. It reduced the mortality due to Type I pneumococcus over pneumonia treated expectantly or by other sera.

I agree most emphatically with the position which Dr. Nippert has taken in his excellent paper relative to the treatment of pneumonia by the so-called cold fresh-air method. It is unreasonable to expect that cold fresh air carries any more oxygen or has any more beneficial effect upon a patient with pneumonia than warm fresh air. It is almost impossible to take care of a patient sick with pneumonia in a cold room or in the open air without subjecting him to the lowered resistance caused by chilling draughts or cold air and dampness. Patients with pneumonia should be kept warm and comfortable. They must feel warm, and not cold. Their skins must be red, not blue. They must be cared for so as to be in a high state of reaction, with a full, bounding pulse.

Some time ago I had occasion to analyze the statistics at Camp Wheeler of 1,400 cases of pneumonia, 996 of which were treated by the open-ward, cold-air method, and 435 treated by the closed-ward, warm-air method. The mortality in the former was 13.9 per cent, in the latter, 3.2 per cent.

I wish to say a word with relation to the prognosis in pneumonia. Considerable experience has taught me that it is unwise to make a favorable prognosis in a severe case of pneumonia. Two striking examples come to my mind of the uncertain factors entering into the outlook in these cases.

Many years ago, while a student in Vienna, I had occasion to examine a young man in Turck's wards with acute penumonia. He was sitting propped up in bed, perfectly conscious and rational, eating a ham sandwich at the time I examined him. While the man looked sick, his pulse was fairly rapid, his heart-sounds were fairly good, and there was nothing to suggest an unfavorable outcome. After the examination was finished, the patient went on eating his sandwich, and I sat down at the foot of his bed, conversing with another physician, who was examining a patient in an adjoining bed. I had hardly been sitting a moment before I felt a tremor-like movement in the bed and, on turning to look at my patient, found him with his head thrown back—a part of the sandwich still in his hand—in a dying condition.

Some years later, while in South Dakota, I examined a prominent attorney with acute pneumonia, a man about fifty years of age, who had been a heavy drinker. While he was delirious and his tongue was dry, his pulse was regular and steady, his blood-pressure was about normal, and his heart-sounds and cardiac area of dullness not beyond normal limits. After finishing the examination, I left the room and stated to the family that, while the patient was a very sick man, I could see no positive evidence of an unfavorable outcome. I had scarcely left the house when I was hurriedly called back to the bedside to find the man in a dying condition.

These two experiences stand out in my mind as clear examples of at least my inability to determine the outcome in a severe case of lobar pneumonia.

Dr. S. M. White (Minneapolis): I fear that as a result of the statements made concerning the efficacy of specific treatment in pneumonia, undue pessimism may be engendered. I believe that we should not at this time take too pessimistic an attitude concerning specific therapy, for the search that is being made for specific measures against acute infections is point by point bringing definite results. However, it seems undeniable that in the case of pneumonia results are so far limited, and specific therapy now holds out no brilliant promises. It is my belief that the evidence warrants the continued use of anti-pneumococcic serum, Type I, in cases of pneumonia due to pneumococcus, Type I, and that, further, in the absence of more specific vaccine and serum in the other types of pneumococcic infection, the autolyzed pneumococci of Rosenow are worth using, particularly when cases are seen early. A pneumonia case should be treated when possible in a well organized hospital, where typing and careful control can be exercised.

It is impossible to say as yet that vaccines are curative, but, in using autolyzed pneumococci for over two years, I have the distinct impression that, as a rule, the course of the infection is different from that where the pneumococci are not used. The temperature curves seem to show a diminished height beginning a few hours after the inoculation, and defervescence occurring rather rapidly by lysis where the type of pneumonia would lead us to expect the typical acme for three or four days and then defervescence by crisis. As yet these can only be impressions, but they are strong enough to lead me to believe that under careful supervision the continued use of autolyzed pneumococci is justifiable.

I am sorry that Dr. Nippert did not have time to take up the subject, interesting to us all, regarding drug treatment in pneumonia. I bring this up for the purpose of mentioning only one point, and that is my hesitancy in using digitalis in this disease. One of the prominent features of pnemonia is the myocardial infection and degeneration, and under these circumstances digitalis is likely to increase a previously latent defective auriculoventricular condition,—in other words, you bring out a partial heart-block. I have seen this occur in a number of instances, and believe that, if digitalis is given at all, the total amount given during the one period of a pneumonia should not exceed, say, one-half or two-thirds of the calculated Eggleston dose, that is 15 c.c. of the tincture, using a physiologically standardized preparation, per pound of body weight.

It is my custom if I use digitalis, which I do rarely in pneumonia, to give this amount early in one or two doses and then give no more. I am sure that I have seen digitalis in private practice given too frequently, and, while under these circumstances it is impossible to prove that the irregularity seen is due to digitalis, I am confident that I have seen a number of instances where an irregular pulse was not due to the pneumonia, but to overdosage of the drug.

Dr. C. B. Wright (Minneapolis): I have enjoyed these papers and discussions very much.

In regard to prognosis: We must realize that it is not so much a question of heart muscle, or of blood, or of general physical strength as of one's ability to resist a specific infection which, a priori, is impossible to determine. As Dr. Larson has shown us, different races and different species of animals react differently to specific infections, so it is with individuals. At the University Hospital during the influenza epidemic, I saw a ward full of patients with chronic incurable diseases, such as heart disease, nephritis, diabetes, have mild infections and recover, while a young, vigorous interne died in about four days, and others were desperately ill.

I tried treating pneumonia by cold-air method a few times shortly after this method was so confidently advocated. I regretted it very much in the last case I tried it on, and I think it exceedingly bad practice in influenza pneumonias. As the incidence of pneumonia increases with the drop in temperature, it does not seem logical that the ideal temperature to contract a disease is the ideal for its cure. I am opposed to transportation of pneumonias unless home conditions are very bad, and believe that the most important things in the treatment are an optimistic, wide-awake, well-trained nurse; plenty of fluid (by rectum if necessary) to maintain the water balance; lots of fresh

warm air; prevention of abdominal distension; and sleep by morphia, if necessary.

Dr. A. D. Hirschfelder (University of Minnesota): I am glad to add all the emphasis possible to Dr. White's skepticism regarding the use of digitalis in pneumonia. In the first place, we have found in the Pharmacological Department of the University of Minnesota, in some experiments done by Messrs. F. J. Kucera and Jos. Bicek, that mere elevation of body temperature greatly increases the toxicity of digitalis, so that at high temperatures digitalis may be three times as toxic as at normal temperatures. When we consider that the large doses of digitalis made popular by Eggleston and Canby Robinson are one-seventh of a cat unit per pound of patient, and that the cat unit is the lethal dose per kilo of cat, or, in other words, for each 2.2 lbs of cat or patient, we must realize that Eggleston recommends almost one-third of the lethal dose *per pound* of patient, and that one third of the lethal dose for a patient or animal at normal temperature may represent the exact lethal dose at a high fever.

These experiments are borne out by the clinical experience of T. Stuart Hart (*American Journal of Medical Sciences,* November, 1919) in the influenzal pneumonia epidemic at Bellevue Hospital, New York. Hart found that in these patients he got symptoms of digitalis poisoning (nausea, extra systoles, heart-block) following the administration of 10-12 mils of digitalis, whereas in ordinary heart cases most observers report toxic symptoms only after 20-30 mils of the tincture have been given. In other words, the heart in these cases of influenzal pneumonia was about twice as sensitive to digitalis as the normal heart. On the other hand, he found that, except for these cases of toxic digitalis action, the heart-rate in influenzal pneumonia, was not decreased by digitalis, except in the very few cases in which there was auricular fibrillation and absolute arrhythmia.

As regards the uselessness of strychnine as a cardiac stimulant,—my experience agrees with that of the many observers who have found that it in clinical doses has no effect on blood-pressure, pulse-rate, or respiration. Those who claim to have seen results from its use are invariably those who do not watch the blood-pressure and who think they see only what they wish to see. The absence of any effect of strychnine on the circulation was shown in exaggerated form by some experiments which we performed upon one of our medical students in the pharmacological laboratory of the University of Minnesota. This subject received one-quarter of a grain of strychnine sulphate hypodermically, and no change in maximal or minimal blood-pressure, pulse-rate, or respiration resulted. His knee-jerks were slightly increased. Three-quarters of an hour later the injection was repeated. Within a few minutes he felt some rigidity of the muscles of both calves, and slight rigidity in the muscles of the neck. In spite of these symptoms, which lasted about a quarter of an hour, he had no change whatever in maximal or minimal blood-pressure, pulse-rate, or respiration; in other words the circulation was not stimulated. He did, however, have a definite feeling of mental exhilaration.

Equally negative have been our experiments upon the effects of camphorated oil upon the blood-pressure and pulse-rate of four medical students, who used several mils of camphorated oil hypodermically. We never got elevation of blood-pressure, even after the blood-pressure had been depressed by nitroglycerine.

Dr. J. P. Schneider (Minneapolis): The unconfirmed state of much of the work relating to the use of sera and vaccines in the treatment of lobar pneumonia makes it wise to practice the application of methods of established worth. Typing of the organisms in each case should be made possible by development of the technic in each of our hospitals. If Type I is found it might be advisable to use the serum treatment. However, I agree thoroughly with Dr. White, that I have observed no definite effect from the use of digitalis in pneumonia. It should be discarded unless indications other than parenchymatous degeneration of the heart muscle from the toxemia of pneumonia are in evidence.

I find in my consultation work that in the matter of stimulants there is also much confidence placed in strychnine, which drug I am sure should be discarded. Camphorated oil has a most tenacious vogue, and in this connection the work of Dr. Morris of the University should be borne in mind. In cats approximately one ounce of the oil must be introduced intravenously before a measurable effect is secured—a little more and the cat dies with cardiac cramp. To carry this over to man it can readily be appreciated that instead of 1 c.c., a .001 c.c. might be efficient and at the same time close to lethal.

I am sure that the use of the caffein salts for stimulation at a critical time of vasomotor paresis is of distinct value.

Dr. D. O. Thomas (Minneapolis): The remedies are unsatisfactory and of not much avail. The outcome of each case depends largely on the type of the disease, the virulence of the infection, and the power of resistance of the patient. But while remedies are often disappointing, much depends on carefully conserving the strength of the patient from the beginning. And one thing that has not been mentioned is very essential, that is, the securing of sound sleep, for in such a severe illness one bad night may be enough sometime to exhaust the patient and hasten an unfavorable termination.

Dr. H. L. Ulrich (Minneapolis): The result of the treatment by means of immune sera or by antigens, autolysate of Rosenow, should not be taken too pessimistically. The variations reported might very well be explained on seasonal virulence, since pneumonia is an epidemic type of disease, and the gravity of all epidemics depends on the virulence of the offending organism. I want to take exception to Dr. Larson's statement when he compared proteolytic digestion with autolysis. No one has mentioned in these papers the use of protein therapy in pneumonia.

In regard to pneumonia heart: it is a negligible factor. There is no such thing as a toxic heart in pneumonia. Porter and his students have shown that the heart immunizes itself against the pneumotoxin step by step as the disease progresses. Furthermore, Porter has shown that death in pneumonia is a respiratory problem due to fatigue of the respiratory center. This fatigue is due to the bombardment of stimuli from the afferent vagi supplying the inflamed lung areas. He was able to show that when these fibers

were cut in animals there was no respiratory embarrassment.

In regard to treatment, good nursing is the most important measure. A turn of the head, a drink of water at the right time, may turn the tide in favor of the patient. During my army service, it was noticed in the wards with an average of 60 patients, with three or four nurses in charge, the death-rate was seven times as high as in the officers' ward, where each man had a private nurse.

All the drugs so far mentioned are superfluous. The one drug which I use is morphine. Dr. Thomas mentioned sleep and rest. Morphine gives this to the patients; besides, I have a feeling it blocks afferent impulses to the respiratory center.

Dr. Larson (closing): Reference has been made to the possible therapeutic value of pneumococcic autolysate in the treatment of pneumonia. In this connection, I wish to point out that the moment the pneumococcic infection begins the body reacts by the production of specific immune bodies. These immune bodies, although present in large numbers, are frequently not liberated from the parent cell until the proper exfoliative stimulus is supplied. This was shown in our laboratory by Hermann in a series of experiments where he injected rabbits with sheep blood cells and after immunization determined the amount of antibodies in the blood serum. He sometimes found rabbits which, after long immunization, yielded a serum absolutely devoid of antisheep-cell antibodies. If such an animal were then treated with a foreign protein, such as typhoid bacilli, and its serum examined a couple of days later for antisheep-cell antibodies it was invariably found that antisheep-cell antibodies were then present, and often in large amounts.

There can be but one conclusion to that experiment, namely, that, during the immunization with sheep cells, antibodies were formed, but not liberated. The typhoid bacilli provided the necessary exfoliative stimulus to cause their liberation. It is possible that autolysed pneumococci may act in like manner, causing the liberation of pneumococcic antibodies formed as a result of the infection.

Dr. Nippert (closing): While the use of a prophylactic vaccine, with the object of immunizing the organism against known micro-organisms, seems rational in a disease as widely spread as pneumonia, its impracticability is apparent. It may be of some use in camps, hospitals or institutions in which an endemic is prevalent.

The use of vaccine against Type I has not met with as much favor among the profession in general as would be expected if the results were as favorable in the hands of others as they are in the reports of the originators. They need more confirmation by other investigators before they can be accepted as conclusive.

Polyvalent vaccines against mixed infection are makeshifts with no scientific basis, much like the shotgun prescriptions of thirty years ago.

Those of you who were privileged to hear Dr. Osler's discussion at a meeting of the A. M. A. in Philadelphia about twenty years ago, of a paper entitled "One Hundred Cases of Typhoid Treated by the Woodbridge Treatment Without a Death," were impressed by the small value of individual statistics.

At the present day, in spite of the claims of enthusiastic investigators, I believe the successful treatment of pneumonia depends chiefly on untiring care and the judicious use of a few drugs. In the varying types and virulence of the infecting organisms it is no wonder that men will differ in their opinions as to the results of certain therapeutic measures, but no man, no matter how great his personal experience may be, should be so presumptuous as to advocate his method as the only lifesaving procedure in the treatment of pneumonia.

SUBCUTANEOUS RUPTURE OF THE INTESTINE, WITH REPORT OF TWELVE CASES*

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Rupture of the intestine produced by external violence without visible injury to the abdominal wall represents a type of traumatic pathology which cannot be treated successfully except by radical surgery. In view of the phenomenal development in the art of surgery, we might reasonably expect that the surgical results in this lesion would show the same gradual improvement we find in practically all other types of operative treatment. This, however, is not the case. Reports from a number of hospitals indicate a uniformly high mortality, varying from 30 to nearly 100 per cent, and without evidence of much, if any, improvement during the past twenty years. The reason for the high mortality seems to be three-fold: first, the frequent absence of early and alarming symptoms of intestinal perforation; second, the reluctance on the part of the general practitioner who first sees the patient to suspect perforation; and, third, the surgeon's delay after he suspects its presence. To remedy the first may not be possible, but it lies within the reach of every medical man to sharpen his diagnostic vision and to improve his judgment so that he may better perceive actualities in regions concealed from the eye. Only in this manner may we expect the physician, and the surgeon, to render more successful aid to those unfortunates who are suffering from this otherwise fatal injury.

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It has been our fortune, and nearly as often misfortune, to have had in our care twelve patients (in the Quain & Ramstad Clinic) suffering from intestinal perforations produced by violence without causing any sign of damage to the abdominal wall. A study of their clinical histories, together with a review of a number of articles on the subject, forms the basis for the opinions which will be stated in this paper.

The violence producing this type of perforation is nearly always inflicted by a blunt, hard object striking the abdomen in a sudden and unexpected manner before the reflex muscular defense of the abdominal muscles has time to come into play. The objects or agents inflicting such blows are many. A report from one London hospital shows the majority of the patients to have been run over in the street. A general summary from a great many sources, however, shows that about one-third of the injuries have been inflicted by kicks from horses.

The manner in which the force is exerted on the intestine to cause a tear in its wall may vary. In most instances the effect is a pinching, or crushing, of the viscus against the vertebral column or against the brim of the true pelvis. Those segments of the intestines which are relatively more firmly attached to the back are less able to glide away from the intruding blow, and, therefore, are most liable to become crushed. The duodenum, the beginning of the jejunum, and the ileocecal region are more or less fixed in their respective locations, and for that reason the most frequent sites of perforation are found in the first few inches of the jejunum or near the ileocecal valve. The duodenum, while resting almost stationary against the back, is so well protected by overlying viscera, costal margins and epigastric aponeuroses that this form of injury seldom reaches it. Nevertheless a number of retroperitoneal lacerations of the distal section of the duodenum where it rests against the vertebral column have been reported.

Another mechanism of producing perforation is thought to come into play when the impelling force thrusts a loop of intestine beyond the reach, that is, beyond the width, of its mesentery. In such a case there is apt to be a tearing both of the mesentery and of the involved intestine. Both crushing and tearing are likely to cause the injury to take place on the mesenteric border of the bowel.

Bursting of the intestine may take place from the sudden compression of a distended loop when both ends of the loop are constricted, either from a local twisting or from other overlying loops of intestines, or from a blockade of the ends by the object (hoof) delivering the blow. A bursting produced in this manner usually lies transversely across the bowel. It may extend around the entire lumen and drive the open ends apart.

Whenever the bowel wall is perforated by a trauma, nature is kind enough to produce a temporary reflex contraction of the intestinal musculature of the injured part in an effort to constrict the opening and prevent leakage. If the tear is great enough to involve half or more of the periphery of the lumen this contraction is not sufficient to stop all leakage, but the spastic condition of the muscularis, nevertheless, is enough to restrain peristalsis and to minimize for a time the leakage. The mucosa is found everted through the opening, even in the smaller perforations. In small openings this plug of mucosa holds back the gross leakage, but of course it does not prevent bacterial invasion of the peritoneum. The proper knowledge and appreciation of this temporary reflex control of leakage is the keynote to our successful interpretation of early symptoms. The chief purpose of this paper is to refresh our minds on this point. It is the lack of this knowledge, or the disuse of it, which more than anything else is accountable for the continued high mortality already mentioned.

Whether the perforation be large or small the impending and certain danger in all cases is infection, peritonitis, and general sepsis. The onset of progressive peritonitis is immediate after a large tear into an intestine filled with digestive juices and liquid food teeming with bacteria. This may be a fortunate occurrence for the patient if proper treatment is near at hand. An immediately beginning peritoneal irritation invites early attention of both patient and medical advisor to the seriousness of the injury at a time when prompt surgical relief promises the best results. When the perforation is small and temporarily closed by the reflex muscle reaction in the intestinal wall, peritonitis is delayed for several hours, during which time the patient may be quite comfortable and easily led to believe that the injury after all had been simple. Because of mild early symptoms there is apt to be a disinclination on the part of all concerned to become alarmed until so late that the gradually oncoming peritonitis and sepsis have assumed mastery of the situation. In many cases there will be no definite early danger signs, and therefore it is very difficult and often impossible to make a

correct diagnosis, before peritonitis, except by incision. The perforation by itself causes no definite symptoms. Intraperitoneal hemorrhage may also be present to complicate the situation, but in general this has been rather rare in the reported cases. Blood present in the peritoneal cavity causes fewer symptoms than does fecal material, which acts as an acute irritant both from the chemical and from the bacterial ingredients. The first distinctive symptoms from the accident are those of peritoneal irritation.

Shock, of variable amount, is to be expected after any hard blow on the abdomen. Its presence, absence, or degree of severity is determined by factors apart from actual perforation of the intestine, and therefore is of no special importance in this consideration. The patient may, moreover, have suffered some other complicating injury at the same time the perforation took place, as, for instance, concussion of the brain. Mental confusion or unconsciousness will then help to obscure the abdominal symptoms and make diagnosis of perforation more difficult.

More or less pain is present immediately after every abdominal injury, whether grave or simple, but the pain may be surprisingly mild and may pass away almost entirely after a few moments. The pain is at the place of injury and can readily be ascribed to bruising of the abdominal wall. If the perforation is small there is apt to be an interval of ease from pain which may last from three to twelve hours, or until progressive peritonitis is started and well under way. Pain which begins with the injury, remains constant, becomes worse, and extends, is of positive value in diagnosis. As an early symptom any other type of pain, or its absence, is of no diagnostic value.

A certain degree of tenderness is to be expected over the region receiving the blow, but it may not be very prominent until after the peritoneum becomes infected. Tenderness will be elicited in the pelvis by rectal examination whenever the pelvic peritonum is infected. This is an important sign both in its presence and in its absence. If rectal examination is painless at one time and shortly afterward causes pain we may safely conclude that an irritating exudate has gravitated into the pelvis in the meanwhile. An investigation of the peritoneum is never complete without a rectal examination.

The rigidity of the abdominal wall is one of the most important signs of intra-abdominal trauma. This, too, is a reflex muscular contraction, and runs parallel in intensity with the developing gravity of the lesion. Immediately after a kick or blow on the abdomen there will be a stiffening of the bruised muscles, even if there is no peritoneal injury, but this is a comparatively mild contraction which is more or less controllable by the patient's will-power, and it soon passes away. True reflex muscle contraction—défense musculaire—is an involuntary and uncontrollable physiologic reaction. Careful palpation, the hand touching the abdomen in the gentlest manner, and the patient's attention diverted, will serve to eliminate a superficially produced muscle spasm. When rigidity is due to intra-abdominal trauma the muscles become lastingly set in extreme contraction, producing a hard resistance which gives to the palpating fingers the impression that muscle has been supplanted by bone. This rigidity lies at first directly over the perforation, and begins soon after the injury. When leakage and peritonitis are deferred the area of rigidity remains limited until the expansion of the underlying infection begins. Then the rigidity extends and may involve the entire abdominal wall as peritonitis advances. From a diagnostic as well as prognostic point of view this fact cannot be too strongly impressed on the medical attendant who is called early after any abdominal injury. At the first evidence of the extension of a rigidity which in a superficial injury should diminish, he should not only suspect, but should feel convinced of, the presence of a serious condition for the remedy of which quick action alone is of avail.

Emesis may follow almost any irritation of the peritoneum and of the abdominal contents, and cannot be taken as an indication of perforation. In the presence of an already advancing peritonitis emesis plays no important part as a diagnostic guide.

During the lull between injury and beginning peritonitis, the pulse gives no indication of perforation; but a gradually rising pulse several hours after injury is a positive sign of increasing, and not decreasing, reaction, and therefore is a definite hint as to the action provoking it.

The temperature gives no more help in diagnosing this condition than it does in any other acute lesion of the abdomen. The thermometer has been a fetish too long with too many doctors. It were better to consider it the least important of our diagnostic means than to continue its use and worship from pure habit. Too many people have died the peritonitis death from various causes because the thermometer had

failed to register up to an imaginary danger-line in time to save life.

Free gas escaping from a ruptured intestine in sufficient quantity to be of diagnostic aid before operation by obliterating the liver dullness is exceedingly rare, although air bubbles found in the exudate at operation is a positive evidence of leakage.

In the early and hopeful hours there is no short-cut method in the laboratory that will help much in diagnosis. Rising leukocytosis and albuminuria are signs of oncoming sepsis, not of perforation. Repeated blood examinations, however, should be made when it seems justifiable to defer operation a few hours under close observation.

The treatment of intestinal perforation, as already stated, is surgical. There are three problems confronting the surgeon after the abdomen is opened and the exudate removed. The first is the finding of the perforation. This is not always easy. Given a large opening from which bowel contents are escaping freely, the fountain head will probably appear readily after the evacuation of the foul liquid. But when the perforation is small and has not yet relaxed and opened, that is, if the operation is done in the early hours, then it may be that a thorough search of the whole intestine must be made in order to find the cause of a small amount of exudate, which may have gravitated into the pelvis. Deposits of fibrinous exudate form in two or three hours on the peritoneum in the presence of even mild infection. These white spots indicate the trail of the infection and can be used to trace it back to the lesion. The older these spots are the larger and more firmly attached do they become. The immediate vicinity of the perforation shows the thickest clumps of fibrin, and the opening itself may be entirely concealed by them. Edema and thickening of the subserosa means an older infection than the acutely red congestion which forms the first step in peritoneal reaction. In the lower abdomen the omentum is likely to show attempts at adhesions near small perforations. About the upper jejunum the omentum is not present. Since most crushing injuries found on the jejunum are on the mesenteric side, it follows that the bowel itself forms the early anterior boundary to the infected area. The beginning infection then spreads first on the posterior peritoneum, and it may enter the retroperitoneal region before peritonitis is evident. This is shown at operation by an edema and an abnormal elevation of the posterior peritoneum. When one perforation is found it should always be remembered that it may not be the only one.

The second surgical problem is the closure of the opening. This is easily done with a few sutures and with the very best prospects of prompt cure if the operation is done before the advent of peritonitis. After six or eight hours the margins of the perforation appear gray and infected. In small tears it is probably best not to excise these infiltrating portions, but, rather, to clean the serosa and infold the edges. When there are multiple perforations or the tear is large the question of resection must be considered. This will be governed by the patient's general condition, the tympanites, and the severity of the local infection. It may be that the wisest plan is to suture a temporary tube or tubes into the bowel. In a late and infected case where resection is clearly called for, the prognosis is usually bad.

The third operative task is that of drainage. Here no cut-and-dried rules can be applied. In advanced peritonitis with pus, fibrin, and feces smeared over a large portion of the peritoneum we, of course, must drain and drain freely. When a perforation has been closed by suture and when, in addition, it seems advisable to drain, the drainage tubes or cigarettes should not be allowed to come near the sutures or the perforation will reopen. When tympanites is serious it may be helpful to do an enterostomy and allow the bowel to empty itself. To drain the afferent loop has proved of definite benefit after resection in infected areas. If suture is made soon after injury and before the infection is carried through the peritoneal serosa into the subserosa, recovery may be expected without drainage even if large exudates are found. The time for subserosa infection cannot be foretold in any case. It depends on many factors, chief of which are the virulence and quantity of leakage and the individual resistance. Twelve hours is usually enough to inaugurate the peritonitis, even in the milder cases.

There remain the cases between the two extremes in which individual surgical judgment must decide. One surgeon says, "when in doubt, close up," and another says, "when in doubt, drain." A definition of the region of doubt is probably not identical with each of the two surgeons, but there is a feeling that the latter surgeon would be chosen in case the abdomen happened to be my property.

The following is an abstract of the twelve clinical histories of our series:

Case I (5,213-A).—C. J., male, aged 20. Kicked in the abdomen by a horse seven hours before entering the hospital. Severe abdominal pain and occasional emesis ever since injury. Pulse, 120; temperature, 99°. Marked abdominal rigidity. Operation nine hours after injury. Tear in mesentery of the ileum one foot from the cecum, repaired without resection. Perforation one-half inch in diameter on anterior surface of the cecum near the ileocecal valve; fecal matter escaping; large amount of bloody exudate. Repaired with two rows of sutures. Profuse purulent discharge from pelvic drainage for two weeks. Recovery.

Case II (21,865-A).—S. C. J., girl, aged 15. Thrown from auto, striking epigastrium against an iron casting. Became unconscious immediately, and could not be aroused until twelve hours later. Severe pain and constant emesis until admission to hospital the second day after accident. Blood in vomitus. Abdomen rigid and peritonitis evident.

Operation forty hours after injury: Blood clots in omentum, free blood and bile-stained mucus in pelvis. Purulent and fibrinous exudate under transverse mesocolon. Two small perforations in jejunum four inches from duodenal junction and near the mesenteric attachment, closed with linen and catgut. Drainage in both groins. Convalescence stormy and complicated with phlebitis and secondary abscesses, but finally good recovery.

Case III (9,803-E).—A. S., girl, aged 5. Fell from toy wagon thirty hours before entering the hospital. She cried from pain for a short time after her fall; then made no complaint for five hours; doubled up with pain near the left groin and frequent emesis since.

Examination: Tender lower abdomen; definite muscle rigidity; very tender per rectum. Mass palpable on the left side. Temperature, 103°; pulse, 120; leukocytes, 35,000. Operation was not consented to until fifty-four hours after injury. Abscess left side pelvis fairly localized. Thick deposit of fibrin and small fecal particles on the outer surface of the sigmoid. Subserous ecchymosis along the brim of the pelvis, broad ligament and involving segment of sigmoid. Fibrin deposit and subserous hemorrhage most marked on sigmoid. Most fibrin left undisturbed, because leakage had been slight. Drainage established. Fecal pus discharged freely for three weeks. Recovery.

Case IV (16,184-A).—G. V., male, aged 19. Kicked in right abdomen by horse twenty-four hours before entering hospital. Blow of kick sufficient to throw him ten feet away. Vomiting and severe cramps continuous since injury. Pulse, 130; leukocytes, 20,000. General rigidity. Immediate operation. Small amount of blood in abdomen; no perforation of small intestine; distal ileum greatly distended from liquid contents. Cecum and ascending colon covered with subserous hematoma. Large hematoma behind peritoneum. Perforation in cecum not found. Drainage placed to retrocecal space. Profuse discharge with fecal odor and occasional particles of feces began at once and continued for four weeks; therefore certain that perforation existed on posterior cecal wall. Good recovery followed.

Case V (1,212-O).—A. D., boy, aged 13. Crushed against stall partition by cow leaning suddenly against his abdomen. Immediate pain and emesis. Very ill for a week, but no physician called. Brought to hospital on eighth day. Tender mass in right abdomen extending into pelvis. Pulse, 132; temperature, 105°; leukocytes, 22,000.

Operation: Large localized abscess, many blood clots, large sloughing area behind cecum filled with blood clots and fecal pus. Fecal discharge during several weeks following. Tedious recovery.

Case VI (5,235-C).—A. J., boy, aged 9. Kicked by horse forty-four hours before admission to hospital. Did not suffer severe pain or faintness, but walked from the barn to the house. Undressed "after a while" and went to bed without assistance. Became restless, and vomited a few times three hours later. Easier next day, but vomited when he swallowed food. Emesis was distressing and fecal during the second night.

Examination: Tender, rigid abdomen. Pulse, 130; temperature, 101°; leukocytes, 12,000; albuminuria. Operation at once: Lower abdomen contained a large quantity of exudate with feces, blood, pus and fibrin. Intestinal contents pouring from laceration in ileum one-half periphery of antemesenteric border. Hurried search disclosed no other injury. Tube fastened into laceration. Drainage in pelvis after mopping the abdomen clean from débris. Profuse, purulent discharge. Intermittent discharge fecal matter. Condition precarious several weeks. Seven weeks later abdomen reopened to relieve persisting fecal discharge. Operation disclosed two other perforations on the ileum, which were overlooked in first operation. Extensive resection of the ileum and final recovery.

Case VII (11,341-A).—A. T., boy, aged 11. Struck over right abdomen by the pommel of a saddle. Only slight discomfort until next morning, when pain began suddenly. Pain and emesis pronounced throughout the day and the next night. Entered hospital thirty-eight hours after the injury. Abdomen, hard and distended; pulse, 136; temperature, 101°; leukocytes, 27,000.

Operation: Free pus and gas, fecal odor, lower abdomen. Subserous hematoma on the head of the cecum with small discharging perforation through the serosa. Area of trauma infolded with suture; liberal drainage. Recovery.

Case VIII (14,261-A).—C. F., man, aged 32. Struck over abdomen several times in a drunken brawl twenty-eight hours before entering the hospital. No evidence that anything but fists were used in the conflict. Abdominal pain and nausea (no emesis) continuous since fight. Face covered with bruises. Abdomen distended and rigid.

Pulse, 126; temperature, 102°; respiration, 26; leukocytes, 6,000. Marked albuminuria. Slight delirium. Immediate operation. Abdomen filled with seropurulent exudate. Large amount of fibrin. Perforation size of five-cent piece on jejunum one and one-half inches from the duodenal junction. Edges sloughing, slough involving margin of pancreas. Suture of perforation. Drainage in left flank. Death in delirium twenty-four hours later.

Case IX (5,781-C).—G. F. K., boy, aged 12. Wagon wheel passed across mid-abdomen. Walked one-quar-

ter mile to his home. Became very ill within an hour. Occasional emesis. Entered hospital after eight hours. Severe pain. Abdomen rigid. Pulse, 140; temperature, 97°; marked albuminuria.

Operation: Extreme tympanites; peritonitis; fibrin in left flank. Search for perforation fruitless, abandoned because of patient's condition. Drainage of left flank. Death from peritonitis and toxemia sixteen hours later. Autopsy showed perforation one-fourth inch in diameter on jejunum near the duodenal junction, bile and gastric contents escaping freely.

Case X (15,265-B).—J. A., male, aged 50. Struck in mid-abdomen by singletree on hayrake when tug slipped off suddenly. Walked half mile, but rested several times on account of faintness and pain. Pain and emesis continuous the following day and two nights. Examination showed progressive peritonitis. Operation (at farm house) forty-three hours after accident disclosed complete rupture of ileum together with part of mesentery. Ends of bowel three inches apart. Massive exudate contained numerous food particles (the accident happened soon after dinner). Approximation of intestinal ends, rough toilet of peritoneum, and drainage. Death thirty-six hours later.

Case XI (18,623-O).—C. V., male, aged 42. Piece of coal fell against his abdomen while at work in a mine. Severe pain and syncope immediate. Pain and emesis constant until admission to hospital forty-six hours after accident. Operated on two hours later. Diffuse peritonitis with large amount of purulent exudate in lower abdomen. A perforation one-half inch in diameter on dorsum of the lower ileum. Rubber tube sutured into perforation. Pelvis drained. Patient died from peritonitis four days later.

Case XII (24,304-O).—I. A., male, aged 36. Struck in pit of stomach by fork handle, a horse kicking against the fork. Pain not severe. Walked about for ten or twenty minutes after the injury. Severe pain and emesis began suddenly five hours later

Examination: Abdomen rigid; pulse, 130; temperature, 100°; leukocytes, 6,000. Small amount of urine with albumin and casts.

Operation fifty-two hours after injury: Large amount of exudate with blood and fibrin; marked tympanites. Perforation one-fourth inch in diameter on mesenteric border of the jejunum twelve inches from the duodenal junction. Posterior peritoneum, edematous. Suture of perforation; drainage in flank. Death from toxemia and peritonitis twelve hours after operation.

A brief summary of our series emphasizes the following points of special interest: Four of the twelve cases were produced from horse-kicks, two from falls, and one each from a hard object falling against the abdomen, fist fight, run over, struck by singletree, crushed by cow against wall, and struck by pommel of saddle. That six, or half the number, were children between five and fifteen, may be explained by the fact that the young are less able to avoid accidents, and by the comparatively slower appearance of the subconscious muscular defense in the child.

Abdominal pain was severe and immediate in six patients. In one the pain was severe after recovery from unconsciousness of several hours' duration. Two said they had but slight pain the first hour or two, while two had no pain for five hours, and one was comfortable for twelve hours after a tear in the cecum.

The jejunum was perforated in four of the patients, all within twelve inches of the duodenal junction. One of these had two perforations. Four had injury of the cecum, and one had a tear in the sigmoid. The ileum was ruptured in three patients, and one of these had three perforations.

The earliest operation after trauma was eight hours. The tear at the duodenal junction was not found at operation, and the patient died. Another patient was operated on nine hours after injury, when a perforation of the cecum was found to be the cause of beginning pelvic peritonitis. He made a rapid recovery. Two were operated on about twenty-four hours after perforation. One of these died of bacterial and alcoholic intoxication. Four did not receive surgical treatment until about the fortieth hour after injury. Three of these lived after stormy, complicated, and protracted convalescences and secondary operations. Three were not operated on until near, or past, the fiftieth hour, and the only one who recovered had, fortunately, a very small perforation on the outside of the sigmoid with a localized pelvic abscess.

Five of the twelve patients died. It is admitted that the three in whom the infection was more or less localized after injury to the large bowel had a much better chance for life than those with general peritonitis; yet we feel convinced that the radical and persistent drainage technic followed out in each case was the essential factor in recovery. All four patients who were over thirty years of age died, but this circumstance cannot be considered of any other significance than that they were operated on too late. The fifth death was the boy run over by a wagon wheel, and who was operated on sooner after injury (eight hours) than any other patient, but in whom, unfortunately, the search for the perforation had to be abandoned in the presence of already established peritonitis and grave toxemia. He was among the first of our experiences in this class of injuries, and it is possible that more mature judgment and skill would have saved his life.

The fact that these patients were not operated on sooner must be ascribed, primarily, to the waiting attitude adopted by physician, family, and friends. A mitigating circumstance was the long

and difficult pre-operative transportation which was an unavoidable obstacle in each case. Necessity for long transportation to a hospital doubles the importance of early decision. Because of the late hour of entering the hospital the earmarks of peritoneal infection were unmistakable in every case, and, if there was any hesitation in the mind of the surgeon, it was based on a well-grounded fear for his mortality statistics rather than on doubt as to the surgical indications.

In conclusion, the following recommendations seem justified: Laparotomy should be made at the earliest possible moment after every rupture of the intestine. Operation before the end of the first twelve hours is likely to be successful. Patients operated on after twenty-four hours have less than half a chance of recovery. Whenever a sharp blow over the abdomen from any source has been hard enough to "knock the breath" out of the patient temporarily, and to cause abdominal distress, or pain, or emesis, rupture of the intestine should be considered possible. If the injury is simple and superficial, the original symptoms will be markedly decreased in an hour or less. On the other hand should the symptoms remain, and after another hour or two become more pronounced and tenderness and muscle spasm increase, we should not hesitate to diagnose a probable perforation and act accordingly. Even if we should err on the side of safety and open an abdomen without finding a serious lesion, our judgment should not be disparaged. In the words of Dr. Kahn, whose article on the subject is one of the best, "The danger of an infrequent needless operation is a nullity contrasted to the frolic with death by delaying surgical intervention in the case of rupture."

It would be both unwise and cruel to subject a patient with a ruptured intestine to automobile or railroad transportation without giving him a full dose of morphine beforehand. But the physician should first note and record carefully the symptoms and signs observed before the opiate is given, and later the surgeon should be mindful of the changes induced by the drug.

The bare statement that seven out of twelve patients recovered does not even hint at the character of the road over which these seven had to travel to regain life. It is one thing to submit to a laparotomy two, four or six hours after the accident, have the injury repaired, be out of bed, and leave the hospital in ten or twelve days with a healed wound; it is quite another story to wait until the peritoneum is thoroughly infected and then through a desperate operation followed by the pain and distress of drainage tubes, frequent dressings, fecal fistulæ, starvation, emaciation, one or more secondary operations, and various postoperative maneuvers, after many weeks and months of misery, finally to recover a more or less satisfactory physical condition. The medical man has responsibilities to the patient over and above that of merely saving his life. We learned as medical students that one of our duties as physicians is to prescribe medicaments so that the patient may be cured safely, quickly, and pleasantly. Why not extend this humane effort also to the surgical patient?

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CHARCOAL IN THE SUSPECTED INTESTINAL OBSTRUCTION

By R. C. Webb, A.B., M.D.,
Instructor in Surgery, University of Minnesota
MINNEAPOLIS

Intestinal obstruction with obstipation, fecal vomiting, and gross distention is readily diagnosed. On the other hand, in its early stages intestinal obstruction will puzzle the most experienced surgeons. Unfortunately, patients with intestinal obstruction do not always come under the immediate attention of the experienced surgeon, but are found when and where least expected.

It is well known that delay is most dangerous in these cases and that death rapidly ensues from lack of treatment. The secretions in the obstructed portion of the gut are extremely toxic, and the vomiting, which follows eventually,

steadily desiccates the patient. In a series of experiments upon intestinal obstruction at Columbia University Van Beuren demonstrated that as the obstruction continued there was a marked thinning of the intestinal wall due to the accompanying distention, and as this progresses, areas of discoloration may occur in the bowel walls. These discolored areas may later perforate. In his series the operative mortality increased in parallel with the amount of intestinal damage.

When intestinal obstruction is suspected the diagnosis is made in the majority of instances by waiting for the various symptoms to develop. In post-operative conditions with a stormy convalescence, the surgeon is loath to subject the patient to an unnecessary procedure. Sometimes much time is wasted giving the various types of enemata and wondering whether the results obtained come from below the suspected obstruction. When the writer was House Surgeon on Professor Gibson's service at the New York Hospital it was the custom to give an ounce of powdered charcoal in every case suspected of intestinal obstruction where for any reason operation was delayed, and the recent satisfactory use of this test in two cases has suggested that it might be of more general use and value to others. Powdered charcoal normally will color the stools black in eight hours. It is tasteless and absolutely harmless. The early use of charcoal in suspected intestinal obstruction will hasten necessary procedures and prevent unnecessary operations, thereby saving many lives and relieving the surgeon of needless anxiety.

REPORT OF A CASE OF SMALLPOX IN UTERO

By R. J. Morrisey, M.D.
FORT PIERRE, S. D.

Mrs. A., aged 33, married and has three children, aged, respectively, four years, two years, and three weeks.

In June last she had a sever attack of smallpox, when in her fifth month of pregnancy. The eruption was very profuse, especially on the face, arms, and back; however she made a prompt recovery. On October 26th she gave birth to a baby boy of average size and perfect in every way except for six typical smallpox scars, or pits. Three are on the forehead, one on either side of the nose, and one on the chin.

Now, in my mind, there is no doubt that the baby had smallpox in utero. The mother is now, and has been, in perfect health except for the smallpox. She has had no other infectious diseases for the past four years, during which time I have been her family physician and have known her physical condition.

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THE RESIGNATION OF DR. WALTER E. LIST, SUPERINTENDENT OF THE GENERAL HOSPITAL OF MINNEAPOLIS

Minneapolis is again facing a really serious problem in the management and conduct of its General Hospital, formerly known as the City Hospital of Minneapolis. The Board of Welfare secured the services of a trained and experienced man in Dr. List; and he finds the conditions such that he can no longer permit his work to be hampered by the interference of those who know nothing about hospital management. Of course, there are a lot of people who think they do, just as there are a lot of people who know they could run a newspaper and edit it, but who, as a matter of fact, know nothing about it.

The existence of a hospital without a trained head is a calamity. If we could only follow our twin sister, St. Paul, and the superintendency of the City Hospital there, with its Board of Control, we should be doing the right and proper thing.

Dr. A. B. Ancker has been there for thirty-five years, and he and his Board of Control are in perfect accord. Dr. Ancker has never asked for anything but what was perfectly right, and the Board of Control have faith in the wisdom of his requests and the necessity of following his suggestions, and have given him what he has asked for, and they gave it to him because they had faith in him. They have been associated with him for so many years that they have learned to appreciate the services of this valuable man. Then, too, Dr. Ancker has established their confidence in him by his scrupulous and methodical use of hospital funds, and of all hospital measures. He even knows where a two-cent stamp goes; and, if he keeps track of such small details, how much better has he kept track of the larger things necessary for the hospital.

In Minneapolis it is quite different. We have had numerous hospital superintendents, men chosen from the local profession. And those men who began thirty years ago when the hospital was in its infancy, together with the staff they selected, and who gradually built the hospital up to what it is at the present time, deserve the greatest credit. Dr. C. G. Weston, for instance, who went into the hospital and gave up his time completely to the development of the hospital, is really the father of the Minneapolis General Hospital.

Then, too, there were occasions when the superintendent was ably assisted by his superintendent of nurses, and perhaps is now. But the writer recalls one superintendent of nurses who stayed here a short time, but was so annoyed by the difficulties and trials and tribulations of the political interference that she gave up her work. She was a graduate of the Boston General Hospital, and thoroughly trained. She now is assistant superintendent of Bellevue and Allied Hospitals, in New York, and we in Minneapolis missed the opportunity of retaining a well-informed and practical hospital worker.

We fear that now the situation may again become a difficult one, for trained hospital superintendents are very few in number. And the Board of Public Welfare, if they succeed in getting an outsider, as they should, must be upheld in their choice. When the question of selection from local men in Minneapolis is sifted down, no one really knows of a trained hospital man; for he must be a man who is able to manage a big "hotel," as well as associate and co-operate with a large hospital staff.

The statement has been made, and not corrected as it should have been, that the University is trying to get control of the General Hospital. An analysis of the hospital staff would promptly disabuse anyone of this opinion. There are now thirty-eight outside men on the staff, which has been reorganized and reformed, and is in control of the situation, against thirty-two men connected with the teaching staff of the University Hospital. Unless this program, which has been

very carefully studied out and laid down, is to be perpetuated, there will be another eruption in the General Hospital service. It would be a great misfortune if the situation was thrown open to adverse criticism just at this time.

The opportunity of getting a man like Dr. List for five thousand dollars and his room and board, trained as he has been and experienced as he is, should not be turned down. And we are sure we all regret that it is necessary to scour the country for a man of his ability and experience. Let us be liberal in this matter of our attitude toward the General Hospital. We medical men should assist the Welfare Board in the selection of someone who has had real experience and real training, and let us keep the management, conduct, and reputation of the hospital out of the way of suggestions from politicians who know nothing about the real situation.

MINNEAPOLIS CLINIC WEEK

Minneapolis is looking forward to its annual Clinic Week the first or second week in May. The date will be suggested or fixed definitely by the time our next issue appears.

We have learned much and profited much by the three preceding years that the Clinic has passed through, and we have learned something from the methods of the St. Paul Clinic Week. We have learned, first, that it pays to advertise—and St. Paul has certainly done well at that, and the results have been wholly satisfactory. Of course, we do not claim, as was claimed in the newspapers, that 2,000 men are expected to attend the Clinic, nor do we claim that 400 or 500 men are in attendance at our clinics. To be sure, last year we did have 400 or 500 men, but they were not men from outside the Twin Cities, but included the Twin City attendance. However, the greater number of them were from Minnesota and the adjoining states. St. Paul had a registration outside of the Twin Cities of about 220, which was really a very satisfactory attendance at their first Clinic. Besides, they had the satisfaction of opening and dedicating the new Miller Hospital, in St. Paul, which proved to be a wonderful drawing card. Also, they entertained their friends very generously, as they always do. And we must wake up to our opportunities or St. Paul will be our friendly rival. However, we promise our guests that this year we shall do better than we have done before, and that means a good deal.

The Journal-Lancet will keep its readers informed in every issue from now on of the plans and prospects for Minneapolis Clinic Week. The notice may be a short one sometimes and at other times more lengthy and explanatory. But we shall preserve our tradition, shall enlarge our Clinic. We shall also see that the visitor has better service than at any preceding clinic.

VACCINATION AND QUARANTINE

The fear of a smallpox epidemic has been an instrument which many people are playing to alarm or discredit either the town or health authorities, or to frighten people away from Minneapolis. As a matter of fact, we have between 400 and 500 cases of smallpox in Minneapolis, but all have been very light, and no deaths have occurred.

The spread of this information has led to the inquiry of a number of people about the necessity of vaccination, and it is probably the belief of every doctor, with very few exceptions, that vaccination is the logical method of controlling smallpox. Of course, there are many people who decline to be vaccinated, probably more among those who believe in Christian Science and that sort of thing than among other classes. The people who are vaccinated feel a protection which they can get in no other way. Then, too, with these light cases, there is more probability of spreading the disease than if the epidemic was a sharp, severe and serious one. It is no hardship for the average person to be vaccinated, provided it is done with clean vaccine, by clean methods, and clean after-care, and it must be a source of great satisfaction to those upon whom the vaccination "takes" to feel that they are practically immune from an attack.

Smallpox has been stamped out in various countries by vaccination. Occasionally there is an infected arm or an abscess, and we presume, occasionally, there may be even serious results from unclean methods or unsuitable vaccine. Such instances are rare, however, and need not cause alarm.

The school children have been pretty thoroughly vaccinated, or are still being vaccinated, and those who reject the vaccination are not permitted to attend school, which is a very proper precaution. Those who are vaccinated do not seem to mind it, and do not resent the necessity for it.

Then comes up the mooted question of quarantine. What does it mean? Some years ago Minnesota introduced a new method in that it abolished the pest-house and it threw around

the family a means of protection and prevention, first, by the isolation of smallpox, that is, isolating the patient, which may be carried on at home or in the hospitals. Of course, very few hospitals outside of the large cities have an isolation ward, consequently the majority are isolated in their own homes. This is quarantine. The family are either vaccinated or requested not to mingle with others, thus lessening the danger of exposure to the rest of the family and the immediate vicinity. It is required, therefore, by the State Board of Health to quarantine all cases of smallpox, and the disease is to be reported within twenty-four hours by the attending physician to the local health officer in every part of the state. This also includes reporting to the Chairman of the Board of Supervisors in townships. After this report is handed in, it is the duty of the health officer or his aides to enforce all quarantine measures directed by the Board. And any official who fails to do his duty may be prosecuted for malfeasance in or removed from office. And if he fails to do his duty he is considered guilty of a misdemeanor. Then, if the townships and villages fail in this respect, the State Board of Health may step in and control the entire county, township, or village, and the municipality pays the expenses. Of course, this is usually a matter of last resort, but it means that unless the smallpox epidemic is controlled by the health authorities the State Board can do what is necessary.

Minneapolis is in no danger, and the likelihood of the epidemic increasing in severity is very remote. And if people would quarantine themselves voluntarily, or even under the direction of the health authorities, this epidemic would quiet down in a very short time. But, if we want to eradicate it entirely, people must be vaccinated or quarantined. This may bring some opposition on the part of the people who are disbelievers, who are antivaccinationists, and who perhaps are members of semimedical cults or even religious cults; but for the benefit of the community as a whole, their objections should be promptly and vigorously overriden.

MONEY NEEDED TO SAVE THE TUBERCULOUS OF HENNEPIN COUNTY

The following statement has been issued by the Board of Public Welfare of Minneapolis and the Glen Lake Tuberculosis Sanatorium Commission:

The Board of Public Welfare of Minneapolis and the Glen Lake Tuberculosis Sanatorium Commission are asking the Legislature to pass an act enabling the Board of County Commissioners to issue bonds for the enlargement of Glen Lake Sanatorium. The request has been passed upon and endorsed by the Board of Estimate and Taxation.

At present there are 118 patients on the waiting list at Glen Lake and about 40 more at Hopewell Hospital, the city institution for the care of the tuberculous. The waiting list would undoubtedly be longer except for the fact that physicians and patients are discouraged by the long waiting list and frequently feel that it is useless to make application.

The plan of the Commission which would be made possible by this bill is to provide 300 additional beds at Glen Lake, which would not only take care of the waiting list there, but would enable the county to take patients now being cared for at Hopewell. Glen Lake is much better adapted for this purpose, and it receives $5.00 per week state aid for the patients who cannot pay their own way, while at Hopewell the city bears the entire expense. When this plan materializes, the Board of Public Welfare will be able to use Hopewell Hospital for the care of chronics, which is one of the great needs of the city at the present time.

There were 457 deaths from all kinds of tuberculosis in Minneapolis last year, one every nineteen hours. Half of these were of people between the ages of twenty and forty,—in other words, largely the young mothers and fathers. Sufficient progress has been made in reducing the death-rate to show that this great menace can be controlled, and we know that the sanatorium is essential and one of the most important factors, not only in curing the disease, but in preventing its spread to other members of the family and the community.

A limit on the total amount of bonds to be issued is placed at $1,500,000, which is the estimated cost of the new building and equipment which will be required. It is intended that the bonds be issued as needed over two or three years. The Sanatorium Commission feels it will require this amount of time to carry out its program carefully.

The humanitarian appeal alone should insure the passage of this act. Viewed from an economic standpoint, however, it would save the county more than the cost. The small tax required, distributed over a period of twenty years, will be insignificant compared with the economic loss resulting from neglected cases of the White Plague.

This is an exceedingly important communication and should be given the most careful consideration, for it means very much to Minneapolis and Hennepin County in the care of tuberculosis cases. Anyone who understands what tuberculosis really means and who has had any experience with cases of tuberculosis will readily see the necessity of the issuance of bonds to the amount of $1,500,000, particularly as they are to be carried over for two or three years.

It seems that the Commission has a number of friends in the Legislature, for the reason that many of the legislators know intimately what tuberculosis means. They have either had it themselves, or they have had patients in their

own families, and they can readily realize the necessity for the early care of the tuberculous.

Then, too, the stimulus which is given to one county is likely to invade other counties, and will be a help to various parts of the state, particularly where sanitaria are located. The question, too, of getting permission from the Legislature to issue this amount of bonds is one which ought not to be hastily carried over, and the necessity of informing the committee on appropriations, and particularly the legislators from Hennepin County, is a part of the duty of every medical man and social worker. THE JOURNAL-LANCET is in hearty accord with this issuance of bonds for the care of the tuberculous sick.

OSTEOPATHIC SURGEONS!

The osteopaths have introduced a bill in the Minnesota Legislature to amend Sections 4993, 4994, and 4995 of the General Statutes of Minnesota, 1913, in which they are asking the privilege of practicing minor and major surgery. They also want to be put on a par with and have the same powers and be subject to the same duties as other physicians and surgeons with reference to matters pertaining to public health, including the reporting of births and deaths. They further ask to have the right to practice osteopathy, which they already have, but in this they include the practice of obstetrics and the administration of anesthetics, narcotics, and antidotes, and the use of antiseptics, germicides, and parasiticides, subject, however, to the same restrictions and limitations as are by law applicable to physicians and surgeons licensed to practice medicine and surgery.

They also ask, in order to satisfy the Board of Examiners, that they be required to complete a two-year postgraduate course in surgery *in a reputable school or college of osteopathy* and to have a one-year training as an interne in any reputable hospital which maintains a surgical department, that is, an osteopathic hospital. Of course, they very carefully say in their bill that they may take all of this work in a college of osteopathy, and presumably their interneship is served in the same kind of a college. And when they speak of a reputable hospital which maintains a surgical department it means that they will probably go to an osteopathic school of that type.

In subdivision three, of this bill, they define the reputable school of osteopathy and the number of hours devoted to anatomy, embryology, histology, chemistry, physiology, bacteriology, pathology, hygiene, hydrotherapy, *x*-ray and electrical diagnosis; and then they emphasize the principles of osteopathy, osteopathic technic and practice to include the nervous system (unfortunately misspelled "nervius"), alimentary tract, heart and vascular system, genito-urinary diseases, ductless glands, metabolism, respiratory tract, bone and joint diseases, pediatrics, dermatology, syphilis, psychiatry, eye, ear, nose, and throat work, gynecology, obstetrics, professional ethics and efficiency, and jurisprudence. All these subjects are covered in 4,422 hours.

This is a remarkable request, and if such a school exists it must be an astounding institution of learning—keeping in mind all the time that it is a real osteopathic school.

Why would it not be as well for the student who desires to take osteopathy and medicine or surgery to go to a reputable medical school, take the courses offered there for regular physicians, graduate from there, and then practice as they please, and by whatever method?

It seems to us that this bill is an effort to lower the general standard of medicine, which is low enough now. And it opens the pathway and the gate for their fellow-workers, the chiropractors, who will probably come to the Legislature two years from now and ask for similar privileges; and yet they are much less prepared in every way than the osteopath to carry out this work.

There are two points to be considered: first, shall the physicians and surgeons of the state oppose this bill, or shall the whole matter be put directly to the legislators with an explanatory note and a definition and study of the medical laws of Minnesota and have them understand that they alone assume the responsibility of this venture in osteopathy? The people are the ones who will be hit by this bill, and if they are willing that it should go through, should other men object? If they are not willing to have it go through, will they use their influence with the Legislature? Is there not a duty on the part of the medical man, be he surgeon or internist, to protect in a measure the public from this new idea in medicine or osteopathy, which lowers the number of years of training and study and experience to about four years or four plus with all the requirements, as against the seven years demanded of the man who studies medicine through its regular channels?

BOOK NOTICES

PRACTICAL PREVENTIVE MEDICINE. By Mark F. Boyd, M.D., C.P.H., Professor of Bacteriology and Preventive Medicine in the Medical Department of the University of Texas. Octavo volume of 352 pages with 135 illustrations. Philadelphia and London: W. B. Saunders Company, 1920. Cloth, $4.00 net.

The purpose of this compact volume as expressed by the author is to introduce the student to public health literature and to call the attention of the physician to public health responsibilities and opportunities.

In the section on epidemiology he outlines the cause, transmission, and methods of control of each of the transmissible diseases, and discusses concisely, but fully, the general measures of disease control, such as sewage disposal, disinfection, production and inspection of milk, and purification of water. The chapter on diseases carried by insects and animals is especially interesting.

The section on food considers the means of preserving, selling, and cooking the ordinary food-stuffs, as well as means of preventing the deficiency diseases.

The accidents, diseases, and intoxications of the various occupations are tabulated and illustrated by photographs.

Diseases arising from the puerperal state, especially puerperal septicemia, are shown to be more numerous in the United States than in any other country with two exceptions. The registration and control of midwives, and the maintenance of maternity clinics, are advocated as means of preventing these deaths.

Under the subject of heat and ventilation, the human body is likened to a furnace, a radiator, a thermostat, and a humidifier. Temperature and humidity are the most important factors in ventilation. Carbon dioxide percentage is not a guide to the fitness of air for breathing. When and how to build a home, and the matters of personal hygiene—bathing, sleeping and exercising—are outlined interestingly, if sketchily.

The chapters are short and to the point; the headings are lettered or numbered, giving an appearance of order and sequence. References are given at the end of each chapter; and the book is interesting and easy to read.

OLGA S. HANSEN, M. D.

THE ENDOCRINES. By Samuel Wyllis Bandler, M.D., F.A.C.S., Professor of Gynecology in the New York Post-Graduate School and Hospital. Octavo of 486 pages. Philadelphia and London: W. B. Saunders Company, 1920. Cloth, $7.00 net.

In reviewing a book written in the manner of this one, the temptation is strong to resort to humor and ridicule. It is a volume of large pretensions, as the title suggests, yet the reader is not surprised to find that the matter is approached very largely from the viewpoint of the gynecologist. The book is written in a very diffuse, superficial, and essentially undigested manner, with pseudoscientific speculation suggestive of the pre-quantitative and pre-experimental stages of scientific learning. It is a hodge-podge of borrowed and abused science, from McDougall's "Social Psychology" to long, unoriginal chapters on "Heredity," "Instincts and Emotions," "Phobias," "Psychoses and Neuroses," and other fields in which gynecologists evidently step in where psychopathologists fear to tread. There is no attempt, as in Shafer's excellent monograph, to state accurately just what is known about the glands of internal secretion, nor to review the immense contributions of recent experimenters. It is the record of the mind of a man, with a single idea, seeking knowledge outside only insofar as it will fall in with and support his subjective, though nebular, hypothesis. The following all too brief excerpts, chosen at random, illustrate the value of this volume:

"Woman is a combination of glandular ovary, corpus luteum, adrenal medulla, glandular thyreoid, posterior pituitary, and mammary acting much more energetically and specifically than in man." (P. 313.)

"It is the corpus luteum which is responsible for hyperthyreoidism." (P. 288.)

"However much the endocrines have to do with external form or characteristics, with physical, visceral and metabolic functions, they have as important and specific relations to the nervous system, to the mind, to the instincts, to the emotions, and to the psyche. And since every gland and its component parts is concerned with each of these spheres, it is well to remember that over or underactivity of any endocrine gland may be limited to, or manifested particularly in, one, two, three or more of these spheres of activity. *This explains the neuroses and psychoses. (Sic.)* Hence the value of ovarian extract (whole gland) and of ovarian residue in the treatment of persistent corpora lutea and hyperthyreoidism and Basedow's disease." (P. 290.)

As an example of case-history and diagnosis:

"Patient, married six years, 2-para, menstruation every 28 days, duration 4 to 7 days, large in amount. Her premenstrual phenomena are sleeplessness and frequency of bowel movements, which have become more marked in the last year. Her blood pressure was 140, and my diagnosis was hyperpituitarism combined possibly with hyperthyreoidism. In asking her whether she had nursed her second baby, born two years ago, she replied: No, because the baby had suffered from pyloric spasm and had been operated upon for the same. If the whole question of heredity is, as I believe, *mainly a matter of inheritance of endocrine relationship*, then this hyperpituitarism in the mother and pyloric spasm is more than a simple coincidence." (P. 318.)

But there is no need to waste weapons against such windmills. It is very much to be regretted that a writer of this author's standing should have added another piece of confusion to a subject of such importance, and, unfortunately, already sufficiently confused.

HAROLD RYPINS, M. D.

NEWS ITEMS

Dr. S. W. Giere has moved from Raymond to Benson.

Dr. A. Eagon has moved from Turton, S. D., to Yale, S. D.

Dr. Edwin F. Wanous has become a candidate for alderman in the aristocratic Eighth ward of Minneapolis.

Dr. Mathias Sundt has moved from Hanska to Minneapolis.

Dr. L. A. Ward, of Bemidji, died last month at the age of 55.

Dr. H. T. Irvine has moved from Fingal, N. D., to Austin, Texas.

Dr. William Hunt has moved from Draper, S. D., to Murdo, S. D.

Dr. Cecil C. Smith has moved from Stanton, N. D., to Beulah, N. D.

Dr. F. H. Aldrich, of Belview, was married last month to Miss Ada Scholz.

The North Dakota State Medical Association will hold its next annual meeting in Fargo, N. D., on May 12 and 13, 1921.

Dr. Thomas Wood, of Rochester, has been appointed to succeed the late Dr. Mosse as a county physician of Olmsted county.

Dr. W. G. Palm, of Joplin, Mont., will locate in Crookston, Minn., next month, and do eye, ear, nose, and throat work exclusively.

Dr. O. K. Winberg, of Lake Park, was reelected president of the Sand Beach Sanatorium Commission at its annual meeting last month.

The spread of smallpox in many Minnesota cities has led to a general vaccination of school children, and it has revived the antivaccinationists.

The prevalence of scarlet fever in Frazee last month caused the closing of the Frazee Hospital, which has been reopened after thorough fumigation.

Dr. Harry Klein, after serving as police surgeon in Duluth for six years, resigned his position last month, and was succeeded by Dr. J. H. Cosgrove.

Mr. Francis A. McDonald, of St. Paul, a medical student in the University of Minnesota, died last month after a few days' sickness with spinal meningitis.

Dr. R. G. DePuy and Dr. P. F. Artz, of Jamestown, N. D., were appointed County Physician and Superintendent, respectively, at Jamestown last month.

The University of Wisconsin, Extension Division, is to give a course in graduate medical work at Superior. Physicians of national reputation will give lectures in the course.

Dr. L. G. Hill, of Sioux Falls, S. D., has moved his office from the Moe Hospital to the Boyce-Greeley building in that city. Dr. Hill specializes in eye, ear, nose and throat work.

Dr. C. W. Woodruff, of Chatfield, who has been out of practice for a year in order to rest, has resumed practice at that place.

Dr. J. B. Gregg has resigned from the faculty of the State University of Iowa, and has moved to Sioux Falls, S. D., to resume private practice as an eye, ear, nose, and throat specialist.

The Children's Protective Society of Minneapolis had over six hundred children under its care in 1920, only seven of whom died, showing the effective work done by this charitable organization.

In the reference in our last issue to the personnel of the Children's Clinic of Minneapolis we left out the name of Dr. J. P. Sedgwick, which shows how easily Hamlet may be left out of the play.

The Board of Trustees of the Asbury Hospital of Minneapolis are planning to erect a new nurses' home and to conduct a nurses' training school in order to meet the urgent demands for high class nurses.

The Duluth Board of Education is extending the dental clinics already conducted for the Duluth school children, and is taking an advanced course in all matters pertaining to the health of its public school children.

Dr. S. Marx White, Professor of Medicine in the Medical School of the University of Minnesota, read a paper last month, by invitation, before the Chicago Medical Society on "The Clinical Application of Digitalis."

Dr. Thomas Russell, of Grand Rapids, has been appointed county physician of Itasca County. His assistants are Dr. M. F. Hayes, of Nashwauk; Dr. J. E. Dufort, of Northome; and Dr. Edward Seguin, of Bovey.

Dr. Joseph W. Bettingen, of St. Paul, died on January 14th at the age of 56. Dr. Bettingen was a graduate of Columbia University College of Physicians and Surgeons, and specialized in eye, ear, nose, and throat work.

At the annual meeting of the Upper Mississippi Valley Medical Society last month the following officers were elected: President, Dr. W. W. Hill, Bertha; vice-president, Dr. F. H. Allen, Staples; secretary; Dr. G. I. Badeaux, Brainerd.

Dr. L. A. Walker, supervisor for this district of the United States Public Health Service, has gone to Washington to confer with the authorities concerning the appointment of a staff for the Asbury Hospital, recently rented for the use of ex-service men.

The Grand Forks (N. D.) District Medical Society held its annual meeting at Grand Forks last month, when the following officers were elected: President, Dr. G. J. Gislason; vice-president, Dr. H. G. Woutat; treasurer, Dr. H. F. W. Law; secretary, Dr. A. C. Dean.

Dean H. P. Lyon of the University of Minnesota Medical School and Attorney Pierce Butler, of the Board of Regents, have prepared a bill for the establishment of a psychopathic hospital at the Medical School. This bill will soon be introduced in the legislature now in session.

Dr. G. A. Carpenter, of Fargo, N. D., has been reappointed superintendent of the Cass County Board of Health and commissioner of the County Insanity Board. Dr. P. H. Burton and Dr. H. W. Skelsey were reappointed physicians of the County Hospital.

Dr. J. E. Soper, of Minneapolis, has been appointed Inspector General of the Public Health Service Bureau for the states of Minnesota, North and South Dakota, Iowa, and Montana. Dr. Soper is a graduate of the Medical School of the University of Minnesota, class of '96.

An aftermath of the trouble growing out of the reappointment of Dr. Mabel S. Ulrich on the Board of Public Welfare of Minneapolis, is a letter written by Dr. F. E. Harrington, Commissioner of Health, asking three of his assistants to resign for the sake of harmony in the department.

The Sioux Valley Eye and Ear Academy held its annual meeting in Sioux City, Iowa, on January 19th, when the following officers were elected: President, Dr. F. I. Putnam, Sioux Falls, S. D.; vice-president, Dr. J. M. Patton, Omaha, Neb.; secretary-treasurer, Dr. L. N. Grosvenor, Huron, S. D.

Dr. J. A. Butz has sold his practice at Monterey to Dr. C. G. Arvidson, who will assume charge of the practice on June 1st. Dr. Arvidson is a graduate of University of Minnesota Medical School (1920), and has been doing work since graduation in the Minneapolis General Hospital, in Asbury Hospital, and is now working at the University Hospital.

The Supreme Court of Minnesota has handed down another decision tending to discourage damage suits against a physician when one of his patients dies. In this case the court held that a physician does not insure correct diagnosis or treatment, but is required to possess the skill and learning of an average member of the profession. The $50,000 sought by the husband of the dead patient was not awarded against the physician.

Dr. Walter R. Ramsey, of St. Paul, has been invited by the King of Belgium to read a paper on "Prevention of Tuberculosis in Children," at the Second International Congress for the Protection of Children, which meets in Brussels, July 18-21, 1921. This invitation was due to, and was given to Dr. Ramsey because of, his splendid work in Belgium during the war.

Dr. Walter E. List, who came to Minneapolis a year ago from Cincinnati, Ohio, to become superintendent of the City (now called General) Hospital, has resigned, and will enter into general practice. If politics is to blame for this resignation, it may be said that too many "reforms" in the reorganization of the hospital stirred up the politicians and made trouble.

When Asbury Hospital of Minneapolis was leased for five years to the United States Public Health Service the matter of the memorial rooms arose. These are rooms furnished by individuals and societies, and bear the names of the donors. The Board of Trustees decided to retain the furnishing intact, and to restore the rooms when the building is released by the Public Health Service. This is a pleasing bit of sentiment worthy the spirit of the institution.

The older patients of the Minnesota State Hospital for Indigent Crippled and Deformed Children have been collecting for some time a fund from their earnings to have painted a picture of Dr. A. J. Gillette. The handsome portrait was presented to Dr. Gillette last month when the 20th anniversary of the home was celebrated. Dr. Gillette is the father of the institution, and his work there is a monument of service rarely exceeded in value by any man's work.

A handsome tribute was recently paid to the memory of the late Dr. W. E. Harwood, who formerly practiced in Eveleth, Minn., being for a long time at the head of the Fabiola Hospital of that city. After retiring and locating in his former home in Joliet, Ill., he went into the service and lost his life through overwork. Under the auspices of the Joliet Chapter of the Daughters of the American Revolution, the citizens of that city planted an ash tree in the court house yard as a memorial to this highly respected citizen.

The newly formed Nicollet Clinic of Minneapolis, located at 1009 Nicollet Avenue, began work as a group last week in very attractive quar-

ters in a new building at that location. The personnel of the Clinic is as follows: *Division of Administration,* Dr. L. B. Baldwin; *Division of Internal Medicine,* Dr. S. Marx White, Dr. J. P. Schneider, Dr. F. H. K. Schaaf, Dr. Olga S. Hanson, Dr. J. B. Carey; *Division of Surgery,* Dr. A. C. Strachauer, Dr. J. A. Johnson, Dr. C. O. Tanner; *Division of Neurology,* Dr. Angus W. Morrison; *Division of Urology,* Dr. G. J. Thomas; *Division of Orthopedics,* Dr. C. A. Reed; *Division of Obstetrics and Gynecology,* Dr. J. C. Litzenberg, Dr. W. H. Condit, Dr. M. H. Haynes; *Division of Ophthalmology and Otolaryngology,* Dr. W. R. Murray.

THE NORTHWESTERN MEDICAL OFFICERS' ASSOCIATION OF THE WORLD WAR

During the St. Paul Clinic Week there was organized at Fort Snelling The Northwestern Medical Officers' Association of the World War. Membership is limited to physicians, surgeons, and dentists who served in the Army or Navy of the United States in any of our wars or the Army or Navy of the Allies during the World War.

The object, as quoted from the constitution, "is to foster the spirit of patriotism and good fellowship which characterized the medical profession during the Great War and to assist by its influence any measures for the good of the service."

There will be an opportunity for constructive work by this organization during the years to come.

The time and place of the annual meeting is in the hands of the Executive Committee.

Every former medical officer in the Northwest should join before March 1st. By so doing he becomes a charter member. Send one dollar for annual dues together with your name, rank, and organization to the Secretary-treasurer, Dr. F. J. Savage, Lowry Building, St. Paul, Minn.

The following officers and executive committee were nominated by the nominating committee and duly elected:

President—Dr. Thomas J. Maloney, St. Paul.

Vice President—Dr. Arthur S. Hamilton, Minneapolis.

Secretary-Treasurer—Dr. F. J. Savage, St. Paul.

Executive Committee: Physicians—Dr. Warner G. Workman, Tracy, Minn., Dr. Knox Bacon, St. Paul, Dr. F. O. Brigham, Stanley, N. D.; Dentists—Dr. Sam Ziegler, St. Paul, Dr. H. Tournquist, Minneapolis.

PHYSICIAN'S OFFICE FOR RENT IN MINNEAPOLIS

A completely furnished office, except professional equipment, at the corner of Nicollet Avenue and Fifteenth Street, in the heart of the city, is offered for rent. Just completed. Telephone Atlantic 7176 or Walnut 2210.

PHYSICIAN WANTED

There is a splendid opening for a physician in a small village near Minneapolis, in a very rich farming community, well settled, and containing a population entirely too large to be served by the physicians located in the larger distant towns. The physician now attempting to serve this population wants another man in the territory. A cordial welcome will be extended to a good man. Address 108, care of this office.

OPHTHALMOMETER FOR SALE

One brand-new Universal ophthalmometer, with table for same and artificial cornea. Cost, $210.00. Will sell for $175.00 cash. This instrument has never been used. Address The Stoddard Drug Company, Stewartville, Minnesota.

INSTRUMENTS FOR SALE

A brand new Spencer microscope complete; oil emersion, set of stains, slides, etc. Book on laboratory technic. Microscope has been used two or three times. Also an L. C. Smith typewriter. Will sell both for $170 cash. Will pack and guarantee delivery. Address 106, care of this office.

PRACTICE FOR SALE

In eastern North Dakota, unopposed $6,000 practice in up-to-date town of 500; best farming section of state; good schools and churches. Collections good; railroad and county appointments transferable; moderate investment. Address 105, care of this office.

MINNEAPOLIS OFFICE FOR RENT

Space in the Physicians and Surgeons Building, Ninth and Nicollet; approximately 1,200 square feet. Will rent whole or part at low rental. Apply to Custodian of building, room 224.

PHYSICIAN WANTED

In a town of two hundred population. Excellent territory. Nearest doctor seven miles. Scandinavian preferred. Address Clay County State Bank, Hitterdal, Minn.

LOCATION WANTED

By a competent physician with fourteen years' experience in general and surgical practice, and long postgraduate courses in surgery. Hospital town preferred. Best of references given and expected. Will make moderate investment if required. Address 103, care of this office.

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MEDICAL VISION*

By J. FRANK CORBETT, M. D.
MINNEAPOLIS

The old Roman code of laws was just; the identical laws administered by the degenerate descendants of its framers became a travesty on justice.

The same general principle may apply to any institution, and medical education is no exception. It is not the form or course of study marked in so many hours that establishes the value of any school, but the way in which those hours are spent by the teachers and pupils. Conscientious effort on the part of a teacher alone is not sufficient, though essential; for it is overshadowed by what may be termed "medical vision."

This vision comes to most individuals after a life spent in studying disease. The average graduate finds that he possesses a certain stock of knowledge which he acquired in his medical course, that is, he has learned certain facts. When he comes to apply these facts to actual practice, he often reaches conclusions which in a few years would seem most grotesque. In other words, he is apt to assume that a certain description he has of disease will enable him to recognize this disease by simply matching words.

A little later he begins to realize that pathology manifests itself by no fixed syndrome, but that its recognition is complex, subtle, and yet, in the end, certain. Actual contact with clinical problems soon enables him to recognize his cases. This is neither anatomy, nor physiology, nor pathology, nor chemistry, nor physics, but a subtle something into which they all enter.

The science and art of medicine is not fundamental, but is applied science. As a printed page is the aggregate of many words and letters, so medicine is a composite of the fundamental sciences. It is well established that one may learn to read through an analytical process by means of the alphabet. On the other hand, individuals may learn to read by the recognition of an entire word without breaking it into its individual letters.

In the practice of medicine we have these two types of men: the man who carefully accumulates every bit of knowledge concerning a case, and finally, summing it together, forms his opinion; the other type of man is the one who recognizes disease by the sum total of its appearance.

Very few individuals possess the ability instantly to observe pictures of disease and to compare these with pre-existing pictures; yet it is often possible for the keen observer to diagnose correctly cases by simply walking through a ward.

Hippocrates studied medicine and recognized disease by its composite pictures; yet Moynihan says of Hippocrates, "His observations when considered with the fuller knowledge of to-day often bewilder us by their accuracy, weight, and sagacity." As to Hippocrates' methods, I will again quote from Moynihan: "He observes, reflects, weighs, judges; considers his former experience of the like or analogous condition. He suggests or discovers a general truth. He lays

*President's address, presented before the Hennepin County Medical Society, January 3, 1921.

down principles for action, and tells how the craftsman shall work."

It is not alone keen observation that is necessary for a clinician, but he must have the ability to determine the actual value of every observation—the faculty of correlating such material and making a definite decision. Keen observation is to accept facts as they are and not try to bolster up preconceived notions. Clinical study alone offers both a field of activity and an incentive to effort.

It is unfortunate that our instruments of precision have had a tendency to dull the keen faculties possessed by earlier medical men for making observations. To-day we have almost neglected to measure the volume of the pulse with our fingers because we have numerous forms of apparatus for taking the systolic and diastolic pressure. The possession of these instruments should heighten our faculties and serve as a control to greater accuracy for observation than it is possible to make with the ordinary senses unaided.

Medicine is applied science, but it requires for its expansion, growth, and development the fundamental sciences. These explain the why and wherefore. Medicine was first applied science, but through the ages, bit by bit, were added various adjuncts. The writings of Hippocrates and Celsus lead us to believe that medical knowledge must be inductive. Such power to reason from almost intangible evidence without the aid of fundamental, exact knowledge, suggests an almost superhuman element.

Among the greatest medical men must be placed the name of Ambrose Paré. Lacking fundamental knowledge, educated only as a barber surgeon, he had faculties that practically none of his contemporaries possessed,—that is, the accurate observation, courage of conviction, sound reason, and what I am pleased to term "medical vision."

Galen supplied the results of experiments on animals to medicine. He has been termed the first experimental physiologist. The evil effect of Galen's teachings were felt in medicine for centuries. His dissections were limited to animals, so that it is not surprising that the anatomical plates of years succeeding Galen's time show men with dogs' femurs. Further than this, he often bent the facts to substantiate some theory of his own. Galen made many important observations that remain true. However, he is responsible for many mistaken ideas. His wildest fancies sometimes arose from lack of association of animal experiments with clinical facts.

Simple physiological facts can be learned from animal experiments. In surgery, at least, one must be very cautious in deriving analogy from animal experiments to man. The tissues of man differ in their potentialities of growth and in other ways from those of animals. Therefore, surgery cannot be learned from operations on dogs any more than human anatomy can be learned from the dissection of cats. I do not wish to disparage the value of experimental surgery, but, rather, to emphasize that it cannot be divorced from clinical surgery.

The work of Sir William MacEwen on "The Growth of Bone" consists almost entirely of a series of animal experiments. These appeal to the clinician as of value in the study of bone conditions. It is interesting to know that MacEwen published every principle from clinical study long before he incorporated these principles in his little book of experiments.

It was his clinical vision, his association with real problems, that made these experiments of so much value. I hope it will not serve as an incentive to further encourage the multitudinous, useless, and purposeless animal experiments that are being carried out so often. So far have many of our experimental workers departed from the study of medicine that they are duplicating the fallacies of Galen.

Of widely different character from Galen are the observations of Harvey. Every medical student should read Harvey's "On the Motion of the Heart and Blood in Animals." The author tells at first how absolutely hopeless the problem of the circulation seemed, but, believing only what he clearly saw and seeing only what actually existed, finally Harvey gave us "The Circulation of the Blood." This work is the greatest contribution made to medical knowledge. When we look to Harvey we can see the reasons for this contribution: first, he was a "partisan of truth"; and, secondly, he had a mind capable of fitting physiological problems to clinical work. As a matter of fact, he was a *clinician*.

Physiologists for years have stored up much valuable information. Most of this has been left dead and buried. A notable exception is the case of Meltzer, both for his intratracheal insufflation and for his magnesium sulphate therapy. I think equally important contributions have been buried for years by the physiologists.

I recall the early experimental work of Ollier in making bone-grafts. I later recall how that Barth rediscovered this and brought it more nearly to a practical solution; but it remained for

the master mind of Murphy, trained in clinical procedure, to make the process of any value.

The question of treatment of infected wounds was a matter of vital importance during the war. The final solution seemed to be, first, thorough mechanical cleansing, and, secondly, the Carel-Dakin treatment. I had the opportunity to see the difference between healing of wounds treated by these processes and the healing occurring after drainage and the use of the old antiseptics. The laboratory must be given the credit for an immense amount of research resulting in the selection of an ideal substance by Dakin. On the other hand, clinical observation brought forth the first of the two great principles. While this problem was being worked out, I read Lister's original contributions. Lister, a clinician, while not clearly visualizing infection, anticipated the germ theory of infection with a remedy. Could it be intuition or medical vision that made this possible?

Anatomy or structure was about the first subject to be investigated by those seeking the cause and cure of disease or wounds. The Middle Ages supplied wonderful anatomists and human anatomists. These were Mundinus, Versalius, Eustachius, and Fallopius. From these beginnings the present great structure of anatomy has arisen.

Anatomy of to-day includes, not only the gross structures of Versalius, but the histologic structures of Schwann.

The study of pathology is so interwoven with that of medicine proper that it is doubtful if anyone is entitled to that name before Virchow. In his book "Cellular Pathology," published in 1858, Virchow laid the foundation for all microscopic study of tissue and its correlation with gross pathology. It is accepted that every medical man must know his pathology. Pathology of to-day often savors of the dead-house. Unfortunately, from the operating-room we can acquire only a very incomplete knowledge of what is going on in the living body. The correlation between pathology and what may be called *pathological physiology,* or disease, is the difficult connecting link.

Bacteriology is one of the late handmaidens of medicine. It is of interest to remember that in 1875 the germ theory of disease was debated in the Pathological Society of London. Neisser, Eberth, Pasteur, Sternberg, Koch, Löffler, Behring, and Erlich are the backbone of this science.

This will end the enumeration of the so-called fundamental sciences. There are many more. Each has become great and unwieldy.

The accumulated experience of the centuries has rolled itself up into an almost incomprehensible mass. It would seem that the man with clinical experience would be the best one to decide how much attention should be given to each of these subjects; and, in addition, it seems incumbent upon the men who are teaching these subjects so to correlate their information that what is imparted to the student may be of value to him and not a load of junk.

How is the medical student to acquire his fundamental knowledge in such form that he can use it? For—

> "Life is short,
> The art long,
> The occasion instant,
> Experiment perilous,
> Decision difficult."

Few students ever remember any considerable part of what they may have learned in fundamental branches. The reason is due, in part, to the fact that almost all individuals are finite and are limited in their capacity to remember facts. One idea crowds out another. Anatomy, for instance, is important, but in anatomy there should be some perspective. Some of it is very important, and most of it is not especially so. When an attempt is made to master all of it but little remains.

Men who have actually practiced medicine should have the vision to enable them to pick out the high peaks. These, impressed on a student, should stick and should form a skeleton for his future researches. Unfortunately, a high degree of purely fundamental knowledge is not attained by medical men actually in practice. On the other hand, those burdened with the fundamental sciences rarely know what to teach and what not to teach. I have sometimes felt in the subject of anatomy, especially, that the student was like a band of laborers who tried to build a road without an engineer to lay it out for them. In other words, they tunneled through endless mountains when they could have skirted the base in a more direct course. Students in physiology spend too much time in work that more properly belongs to physics.

On the other hand, the study of the central nervous system is generally neglected. A good understanding of the anatomy of the central nervous system and some knowledge of its function are most important.

Diagnosis loses much of its mysticism or intangibility when explained on a neurological

basis; therefore, I say that every medical student should know the nerve supply of every structure in the body. I cannot help but illustrate this by a few cases:

I recall one case where the patient had suffered intense pain in the left upper quadrant of the abdomen. Neurological study demonstrated the trouble was not in the abdomen, but was a tumor in one of the intercostal nerves

The second most graphic instance that I recall is a boy who was shot near the costal margin. His symptoms were largely abdominal; however, careful investigation led me to enter the chest, instead of the abdomen, where I repaired the damage by sewing up the diaphragm.

Again and again, cases of irritation of the diaphragmatic pleura have been presented to me for examination for appendicitis.

Still more remarkable was a case of spinal tumor simulating an attack of appendicitis.

The value of the hospital year is very great. Repeatedly I have seen students enter the General Hospital whose minds had only the faintest conception, if not an actual caricature, of the work they had chosen for life. One year of contact with actual cases not only enabled them to recognize disease, to correlate the symptoms or signs to the underlying pathology, but stimulated them in their own interest in anatomy and physiology to help them explain the wherefore.

The points I hope to emphasize by this hasty sketch are, that medicine is an applied science; that fundamental science is necessary, but must not supplant clinical study. It seems to me that there is some danger in medical education in the tendency to make elementary pure science paramount. Clinical work offers incentive to investigate the underlying fundamentals. Many of us, after graduation and a few battles with disease, have dug out for ourselves more or less fundamental science. A brief contact with British surgeons left me with a profound respect for their anatomical knowledge. I believe the Royal College of Surgeons, a graduate institution, is largely responsible for this.

The next question is, should our medical schools be primarily for research? The field is so enormous and analogy from experimental work is so fallacious, I believe this type of work should be reserved for graduates after they realize the character of problems actually confronting them. Clear vision and ability to reason are more apt to come from first learning the best of what is known.

ATYPICAL AND UNUSUAL FORMS OF PARALYSIS*

By W. A. Jones, M. D.
MINNEAPOLIS

The causes for various forms of paralysis given in the text-books are so misleading and so unnecessary that it may be well to confine this discussion to the most likely factors which induce paralysis. First are the infectious diseases. They cover practically all conditions that have commonly been classified as colds or exanthematous disorders, communicable diseases, etc.; and all of them can now be safely grouped under one heading, namely, infection. The second cause is that of new growths in the central nervous system, such as tumors, results of arterial disease, and pressures arising therefrom. The third factor consists of mechanical injuries, either direct or indirect. Naturally, other factors might be discussed, but the three leading factors given above are sufficient for our purpose.

The first group covers those which have developed from other constitutional or acquired diseases, including infections with their varying toxins. It embraces syphilis, tuberculosis, influenza, and similar types of air-borne or contact infections.

The second group consists of growths which include disease of organs either in or adjacent to the nervous system. The onset of a tumor may be very insidious, and its fundamental factor may be undemonstrable. Perhaps, broadly speaking, a new growth is due to a process, either chemical or endocrine, which lodges in a deficient part of the nervous system. This growth may be microscopic in size, or may involve a large area of nerve tissue. It is a fair speculation to say that these growths are in the vicinity of the blood-vessels, perhaps arise from terminal blood-vessels; and from these the cell-proliferation proceeds slowly or rapidly, according to the character of the original invasion. A gliocell process, a growth of malignant type, or a proliferation and hyperplasia of tissue from neighboring blood-

*Presented before the Southern Minnesota Medical Association, November 29, 1920.

vessels, perhaps carrying a blood-stream which is more or less infected, and of which we have comparatively little knowledge, may be the only explanation.

Under the third group, injuries to the head are frequently found very unsatisfactory and inexplainable causes for a disease of the brain which is followed by a paralysis. The causes of the majority of injuries that we have to deal with are usually remote, and are brought to light only through some member of the family who happens to remember that the patient fell or was struck anywhere from five to twenty years ago. These old injuries are very infrequently the cause of a local paralysis. They are important only when they invade definite territories which are endowed with special and active functions. As an illustration, one can readily see how an injury which occurred from striking the back of the head may produce a hemianopsia, vertigo, and headache. The only paralysis is seen in the loss of function in one-half of each eye. This, perhaps, is not unusual or atypical, but it occurs so infrequently that it may be used as an illustration of an injury to the head without other definite results.

It seems quite evident that there are latent possibilities in every man's brain that are either under subjection or manage to maintain their function until so many demands are made upon them that a disease process is evident. Considering the past few years, even long before the war period or the influenzal epidemics, or the epidemics of poliomyelitis, there has been an instability of the nervous system which seemingly has increased from decade to decade; and, if this be true, the lack of resistance is the causative factor, whether due to mental, nervous, or invasive conditions, and it must be carefully compiled. It is known that more brain tumors have developed in the last ten years than in the previous ten years, and the environmental state of the individual is more or less responsible for it, partly because the power of resistance has been lowered and the invasion of disease promoted. The great war, with its strain and worries, its anxieties and its individual injuries, has produced more lesions of the nervous system than any other factor unless it be the epidemic of influenza, a communicable, infectious disorder. Let me illustrate what I am trying to convey in the brief recital of the following cases:

A young man of twenty-two, who for three years, at least, has had an aortic lesion, and whose family physician was much surprised when he was passed by the examining board as a fit subject for the work of a soldier, went overseas for a year, and later returned and was discharged. A year later, while engaged in maintaining a truck service, he attempted to unload a large amount of furniture from a railroad car. Most of this he did alone, and thereby subjected himself to a tremendous muscular strain. The result was that one week after this overexertion he noticed, in the evening, that his speech was becoming involved, that he was not able to enunciate and articulate clearly, and that his right face and right arm tingled. In the morning he was found to be aphasic, and had difficulty in moving his right arm and hand, but was able to move his leg. He was sent to the hospital, and two days later had a typical convulsion, which left him absolutely hemiplegic on the right side, and entirely aphasic.

Now, it would seem that this man had simply overstrained his aortic lesion; but, as a matter of fact, he had syphilis, which was contracted two or three years before his paralysis. He admitted this to the physician, but denied it to the family. Under antispecific treatment he has recovered practically the use of his right leg and to a very marked degree the use of his right arm, but he is still aphasic. The final analysis of this case, then, should be something on this order: that he had a specific infection originally, from which he contracted a specific aortitis, which in turn was responsible for his audible aortic lesion, and which also had produced disease of some of his cerebral blood-vessels, and the strain he underwent was responsible for the incipient and slow leak in his left frontoparietal region.

Another case is that of a man of twenty-nine, who was seen July 10, 1920. This man was a merchant by occupation, and had no hereditary involvement,—a man of very good habits. He was a soldier, also, and was sick one week in 1918, in France, when he evidently had an influenza. In March, 1920, he had a severe pain in his back, which lasted but a few days and then disappeared. This information was corroborated by his wife and father.

On the first of April, 1920, without any previous disorder, he showed a marked impairment of station. He staggered while walking, and found difficulty in buttoning his clothes with his left hand. In May, a month later, his vision became impaired, he had diplopia, and a frontal headache which continued constantly but varied in degree. The last named symptom was rather an important item in his illness. At the time of his examination, in July, he complained of occipital head-

ache, and five days before he appeared for examination he had many attacks of vomiting. He had a moderate blood-pressure of 144 systolic and 90 diastolic, and a pulse-rate of 90. His pupils reacted to light and accommodation, but he showed, what is commonly found, pink eye-grounds.

The diagnosis rested upon the impairment of his locomotion, his ataxia, and the fact that he had an adiadokokinesis in his left hand. His disturbed vision, diplopia, and frontal headache were sufficient to lead us to believe that he had a tumor or cyst in the right cerebellar lobe. After a few days of observation, and with the consent of the family and their knowledge of the dangerous condition he was in, he was operated on by Dr. J. Frank Corbett, who exposed the entire cerebellar mass and the pons, and evacuated a large cyst in the right cerebellar lobe. For two days the man did well, and then he developed a hemorrhage in the old cyst cavity and died.

Another case illustrating the fundamental instability of the nervous system is that of a boy twenty years old, who, while attending school, became what he considered a good athlete, in spite of the fact that he steadily lost in weight. This he attributed to his system of diet, which did not conform to the usual training-table of an athlete. He was irregular in his habits, he looked sick, he had enlarged glands in the neck, and he complained of pain in his left arm, which he said was due to an injury. At about this same time he had an infection in his left face, which was streptococcic in type, but which lasted for nearly four weeks. He went down to Oklahoma in the winter, where he contracted an influenza which developed into the bulbar type, and when he returned, four months later, he had all of the symptoms of a typical bulbar paralysis, which was undoubtedly due to his influenzal infection. He lived less than ten months from the time of the original onset of his trouble, a rather remarkably acute onset, and a very rapid course for a bulbar lesion.

The following case illustrates one of the queer and unusual types of paralysis due to an influenzal infection.

A woman of forty, a teacher by occupation, on awakening one morning about the first of February, 1920, found she had a paralysis of her right seventh nerve; at least, she felt that the right face was involved by some sort of symptoms. She was seen within two hours of the onset of the attack. She then had a partial paralysis of her right arm, a fairly marked aphasia and double vision, with dyspnea. There was also an involvement of her third nerve on the right side, and the sixth nerve on the left side; that is, she had a paralysis of the internal rectus in the right eye and a paralysis of the external rectus in the left eye. She was in bed six weeks, and the disability of her right arm cleared up within two weeks, her right face was normal within four weeks, and the paralysis of her ocular muscles disappeared at the same time. She still has difficulty in enunciating and articulating her words,—a sort of staccato speech. This paralysis was unquestionably of influenzal origin, but it shows the variety and extent of the symptoms which occur not only in the cranial nerves but from pressure upon the upper spinal cord and brain.

The next case is that of a baby eleven months old who came from neurotic stock on the mother's side, but was well-balanced by the good health of the father. This child was normal at birth, was breast-fed, but had much colic. He was well up to the age of five months. At that time he ceased to gain and became stuporous, sleeping much of the time. Under forced feeding he improved a little, but on the first of March, 1920, he developed rhythmical contractions of the hands with flexion of the fingers. Two days later his right face and eyelid began to twitch, and gradually the mouth and tongue were involved in these active contortion movements. A spinal puncture was done, and a few drops of bloody serum evacuated. He was then ordered fed on the same diet that his two stronger brothers were brought up on, that is, the ordinary food necessary for the ordinary growth and development of the child, and under this system of feeding all of the symptoms disappeared. His pathology was evidently due to a nutritional disorder.

A different type of case presents itself in a man of thirty, a farmer, who had influenza in February, 1920, which he stated was very mild in type. About March first he was taken with a rhythmical jerking of his head to the right side. This lasted about half a minute at a time. But he was unable to speak connectedly, so that he evidently had a paraphasia or, what is more likely, an amnesia. He stated that he simply "said words," and that his tongue felt thick. But this attack passed away not to recur again until late in July of this year, when he began to have a diplopia, with blurred vision and pink eye-grounds. Then he remarked that when he closed one eye all straight vertical objects seemed curved. The right eye curved objects to the left, and the left eye curved objects to the right; and in stooping over he complained

of a dimness of vision. This man was obliged to return home, so that he was not observed further after the examination was made. He came back, however, in September, and was referred to another physician, who made a very complete examination and found that he had no syphilis and that his blood and spinal fluid were absolutely negative on all tests. He had a choked disk in each eye. The *x*-ray photograph made of his head revealed shadows,—the general and usual outcome of *x*-ray examinations of the head. However, a diagnosis of tumor of the brain was made, a suboccipital decompression operation was performed, and a tumor of an infiltrating type was found in his left cerebellar hemisphere. It could not be removed, and there was nothing further to do. The man died within a few hours. Undoubtedly this man had a growing, infiltrating glioma, which did not present any symptoms until this attack of influenza lighted it up.

The following is one of the difficult cases for diagnosis. The man, a farmer fifty years old, had always been well up to the tenth of June, 1920, when, while cranking an automobile, he felt something "break" in his head. Since that time his headache had been increasing in frequency and degree, and occupied not only the frontal but all regions of the head. He then became weak, was uncertain in his gait, and developed a weakness of his right arm and of his left leg. He was unable to sit in a chair on account of his muscular weakness. He was brought to Minneapolis, the case diagnosed as one of brain tumor, and was referred for operation. He was put under observation, and although he was stuporous and untidy and more or less helpless, the operation was deferred. Evidently Providence lent a helping hand, for after three weeks elapsed he had begun to improve very markedly. At the end of five weeks he had recovered completely. What was the pathology? Evidently a strain temporarily blockaded his cerebral circulation and produced a localized edematous area, for, surely, no tumor of the brain could have improved in that time. No history of influenza was obtainable, nor was there any history of any physical disease. It was simply one of those strange and almost inexplicable brain disorders which look and act seriously, but from which the patient, when left alone, may recover. This patient has a brother forty-eight years old, who, in September, 1911, had a transient paralysis of his right arm and of his speech. The whole attack lasted about thirty minutes. He had no repetition of the attack except that he complained he could not work as well or stand up under a strain; and, unfortunately, some physician told him that he was likely to have three attacks, and that the last would prove fatal. The probabilities are that this man had an arterial spasm which temporarily suspended the activity of the centers of speech and the movements of the right arm. There is no reason to believe that he would have further trouble; only this theory has become one of our well-known medical superstitions.

A case similar to the one just reported is that of a man of sixty who for years has suffered from migraine. Two months before his admission, which was approximately December 10, 1919, he had a diarrheal attack, which lasted about four weeks, and we assumed that this was an attack of the gastro-intestinal type of influenza. Following this, or coming on about three weeks later, the patient, while eating supper, noticed some numbness in his left hand, which seemed to travel up the left arm and invade the lower left face, chiefly in the lower lip. He got up from the table and went out to the barn, where he had a chill lasting several minutes, but he said he was able to go on and do his share of the chores. He apparently felt no continued inconvenience until four days later, when, while milking, the disturbance of sensation in his left hand returned with an almost immediate paralysis, and traveled over the same route,—arm and face. He finished milking the cow with his right hand. When he got into the house he found he was unable to speak, and also had difficulty in swallowing. Immediately following this, his head was drawn to the left side with a rhythmic, forceful, jerking movement. This was so strong that he felt as if his head would fly off his body, and the attack continued for about ten minutes. He stated that, in spite of the fact that this disturbance of sensation was present he was strong and powerful in the left arm and hand with the exception of his thumb and forefinger. Two weeks later he found that he had lost power in his left hand and arm, and this loss of power was accompanied by a series of irritative phenomena. The flexors of the fingers were in spasm, the flexors of the wrist the same, and the arm was drawn back with convulsive movements, the attacks lasting approximately five minutes. At the time of examination his voice had improved so that he was able to talk fairly well, but in the meantime he had a loss of strength and power in his left leg, so that in all probability he had developed a left hemiplegia, due, fundamentally, to an arterial degeneration, not a sclerosis, which was hastened

by his diarrhea, the latter evidently of the influenzal type.

Another case is that of a boy fifteen years old who had a series of furuncles. These boils were treated by the vaccine method, and apparently without much success, for he developed a large abscess under the right mastoid in the tissues of the neck. Following this he had a paralysis of the third and sixth nerves, resulting in a paralysis of the internal rectus on one side and the external rectus on the other. This combination of the third and sixth nerves is not infrequent, and is explainable by the fact that the third nerve, which springs from the upper pons or between the two crura, is in close relationship with the sixth nerve, which springs from the lower border of the pontine bridge. They are fairly close together, and are widely separated from the fifth nerve, which comes from the center of the pontine bridge on the lateral side; consequently an infected area may simply pick up one or more cranial nerves and on opposite sides of the central stem. This case is still under observation.

These cases are cited for what they are worth, but they serve to point to a variety of unusual forms of paralysis.

DISCUSSION

Dr. Haldor Sneve (St. Paul): I listened with a great deal of interest to this entertaining paper by Dr. Jones, and I wish it were as easy as Dr. Jones says to change the confusion existing in our text-books to a little rule by thumb, but, unfortunately, when so much obscurity exists in the causation of nervous diseases and paralyses of various kinds, that is almost impossible, and there is good reason for the existence of the confusion.

We may say that the causes of paralysis are mental and physical. Under the term *mental* we can include a large number of cases that we call functional, hysterical cases, neuroses of various kinds, and it is this class that furnishes in my experience the largest number of bizarre and atypical forms of paralysis.

Of the typical causes of paralysis, as Dr. Jones has well said, it is the infection that plays the great rôle. Even in the cases where mechanical causes come into play, where, for instance, there is a hemorrhage or an embolism, or there is a thrombosis, it is an infection, and syphilis plays a large part in the infection so far as nervous diseases are concerned, and it is the infection that determines the mechanical cause of the paralysis that is present.

A great number of the paralyses that come under the chronic diseases of the cord and so-called systemic diseases of the cord are probably infections in origin, but, unfortunately, these cases are so slow in their development and in their exposition that post-mortem examination, when it takes place, does not reveal the original cause. There are also, of course, some cases of lack of development. We assume that there is lack of development in some of these cases of so-called syringomyelia with paralysis, so that there is a great deal of confusion as to the cause of syringomyelia. The diseases of the muscles themselves, perhaps of the endocrine glands, also produce paralyses which are not connected with the nervous system.

Speaking of case histories, I am reminded of two cases of almost complete hemiplegia that came under my observation and in my service at the City Hospital in St. Paul, with choked disk, headache, and vomiting in which a diagnosis of brain tumor was made, but in which on post-mortem examination we found evidences of Bright's disease,—a very unusual cause of paralysis.

I could go on and cite other cases, but it would simply tire you.

Dr. E. M. Hammes (St. Paul): I think Dr. Jones is to be congratulated, not only on the great number of atypical cases he has presented, but on the wonderful diagnoses he has made in all of them.

As both Dr. Jones and Dr. Sneve have pointed out, syphilis is the most important factor and most frequent cause in both the atypical and the typical types of paralysis of the central nervous system. For that reason it is not sufficient to say that it is a blood lesion and be satisfied with a negative blood Wassermann, and conclude that this cannot be due to syphilis, but one should make an examination of the spinal fluid, not only for diagnostic purposes, but when the case is obtained early. If you make the diagnosis early and you commence treatment early, you prevent many of the degenerative changes which take place in the nervous system.

I wish to report a case similar to the one Dr. Jones first reported with a different etiology.

> A young man, twenty-four or twenty-five years of age, who, one morning after breakfast when some one asked him a question, was unable to speak. Within a short time he developed weakness in the right arm; within twenty-four hours he developed weakness in his right leg. He was sent to the City Hospital on the Neurological Service, and our first diagnosis was syphilis of the central nervous system; syphilitic endarteritis with thrombosis. Examination of the heart showed he had aortic regurgitation, which had gone through the stage of syphilis. The internist expressed the same opinion. Examination of the blood and spinal fluid was absolutely negative. He had other findings which spoke against syphilis. He had a leukocyte count of 20,200; he had a temperature of 102.5°, which gradually dropped to normal, and for a week he seemed to do nicely. He had a chill; the temperature went up, and, on studying the heart further, we found the aortic lesion had progressed and was involving the mitral valves. We found we were dealing with an ulcerative endocarditis, with secondary thrombosis or embolism in the cerebral blood-vessels. He is clearing up from the hemiplegia, but he will undoubtedly die of ulcerative endocarditis.

Other cases of atypical paralyses are the atypical types of poliomyelitis and polio-encephalitis. I saw a case just a few days ago with Dr. Plondke, which brought out this point forcibly.

Due to conservative surgery, the patient was not put on the operating-table. The patient was a young lady referred to the doctor with a diagnosis of probable acute suppurative appendicitis. She had excruciating pain and tenderness in the right inguinal region. She showed a rise of temperature and all the associated

symptoms. Not very long afterwards she developed weakness in the right leg. Following this she developed weakness in the left leg, with bladder and rectal disturbances. It was, undoubtedly, a case of acute anterior poliomyelitis. Examination of the abdomen, when the patient first came in, revealed a definite, localized tumor, which was extremely tender, and which undoubtedly, as we proved afterwards, disappeared as the bowels were evacuated, and without doubt the paresis of the bowel and the tenderness over the abdomen were due to pressure over the inguinal nerve. She has temperature above normal and is running the course of a case of anterior poliomyelitis.

Another group of paralyses has been the group of encephalitis, especially those following influenza. Some of these cases of lethargic encephalitis are very interesting. We watched some of these cases recover, and then they came back with ataxia, with paralysis, and with dizziness, simply showing an acute inflammatory process in the brain, probably secondary to the influenza. They have become arrested, and now the condition is lighting up again. In some of these cases which we saw we congratulated ourselves on the good diagnosis we made, but we found out afterwards that we were wrong.

I recall a case of atypical sciatic neuritis with paralysis of the right leg. A young man as he stepped off an elevator, which started too soon, jerked his right leg, and within a few weeks developed pain along the sciatic nerve. When I saw him he had developed lumbosacral plexus neuritis. My diagnosis was sciatic neuritis due to trauma. We put him on the usual treatment, and, instead of improving, he progressively grew worse. Within a month or so he developed bladder symptoms, and one of the Minneapolis surgeons suggested taking an *x*-ray. This was done, and we had a beautiful shadow in the region of the sacrum. He was operated on by Dr. Sweetser afterwards, who found a chondroma of the sacral bone.

Dr, Harry A. Baker (Minneapolis): I think the cases cited by Dr. Jones are of great worth. Dr. Jones very clearly shows that there are other diseases besides syphilis that enter into cerebrospinal disease.

I read an article recently in which the author stated that we should suspect every patient to be a syphilitic subject until proven otherwise, and, that, if we carefully searched for the cause in these cases, we would be rewarded many times.

The differential diagnosis of these cases becomes less complex in proportion to the degree in which we can eliminate the syphilitic factor, and Dr. Jones' cases show quite clearly that there are other conditions besides syphilis which enter into the syphilitic pathogeny, such as tumors, acute infections, and the pronounced arterial diseases. In my analyses of these cases I have gone to the other extreme of pronouncing these patients non-syphilitic unless proven otherwise. It is just as well to accept clinical judgment, and give it some weight of consideration as to rely entirely on the bacteriological findings, because it is humanly possible for the laboratory man to misinterpret the findings. I find this procedure of distinct advantage to my patients, and I may say they get along better. If you do not positively find out what is the matter with the patient, he should be put on specific medication with certain restrictions. When you cannot make a specific diagnosis, right or wrong, safe and sane therapy begins, and therapy in these advanced cases is most unsatisfactory. It is not my custom to pronounce the sentence of death on those suffering from organic diseases. I think it is just as well that we do not pass a too hasty opinion or give a certain judgment as to the specificity of these cases or their curability.

Dr. Jones (closing): Dr. Sneve apparently agrees with me in most of my contentions. The chronic disorders that are due to other chronic diseases than those of the nervous system, are very common, and I could recite, as Dr. Sneve has recited, a number of cases with these peculiar troubles. Often the uremias account for a great many things. I remember one woman long ago who was sent to me with a large dilated stomach which hung down into the pelvis and nearly filled it, but for some reason or other no one could find the cause of the trouble. She was examined very carefully, and was under observation for a long time, but her vomiting continued. One day I saw her in the act of vomiting and gave her ten grains of calomel on her tongue, which made the diagnosis for us. She had an acute localized nephritis and nothing else, and in the course of time recovered. Her stomach went back to the normal position, and she was restored to her family twenty-five pounds heavier.

Examination of the spinal fluid and blood is a very great aid in some cases, but it is of absolutely no benefit in our doubtful cases, because we find a number of people who have had syphilis, and their syphilis showed by the clinical findings. The man who neglects this is neglecting his patient and his work. Only 40 per cent of the Wassermanns, I think, are good, and the rest of them must be accepted as either theoretical or promising.

I have had one patient of whose morality and integrity I have no doubt whatever. Her husband was in the same class, and yet she developed depression, which lasted for several weeks. She finally got better and went home. The next morning she attempted suicide, and there began what we were looking for,—a little paralysis of the right eyelid and the right pupil. We made two careful investigations of her spinal fluid, and a blood Wassermann, which was sent to two different laboratories, and both reports were negative. There was something wrong with this woman, but on the clinical findings alone I was determined to put her on antisyphilitic treatment. I did so, and she made a prompt recovery.

These old cases are interesting because we know so little about them. Some of the old doctors had the right idea, but they did not know it, when, years ago, they treated patients with mercury, and in any kind of extreme they used syrup of sarsaparilla compound and they cured a lot of people, but did not know how or why they cured them because some of these old cases had syphilis, and mercury did the job. Why should we not follow in their footsteps and give more mercury?

The anterior poliomyelitic paralyses of the encephalitic type are interesting, and a number of these cases could be recited as atypical forms of paralysis, but I endeavored, in my paper, to suggest a simplification of the causes and let the rest take care of themselves.

A STUDY OF CONICAL CORNEA WITH ESPECIAL REFERENCE TO ITS APPEARANCE IN LATE ADULT LIFE*

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MINNEAPOLIS

Since so much regarding the etiology of keratoconus is yet within the boundaries of terra incognita, so much regarding its onset and progress difficult of solution, and so much of the uncertain swings about the portals that enter the field of its correct treatment, I feel a hesitancy in presenting this subject before you to-night. Were it not, however, that the problems relating to all phases of this disease are of fascinating, even transcending, interest, I should, indeed, not permit myself its intrusion upon you.

The condition is undoubtedly one of the most striking phenomena in the field of ophthalmology; and, when rated among external diseases of the eye, as a clinical picture, probably the most beautiful.

The question, "How long has conical cornea been recognized?" would probably be answered by the knowledge of when our own art of medicine began. No one knows; however, it is interesting to note that what we first learn of medicine is not in a work on medicine, but in an ancient work of law, "The Code of Hammurabi," promulgated by a very ancient king of Babylon-Assyria, who ruled about 2250 B. C. and, for *our* especial interest and very strange to say, relates almost entirely to ophthalmology. That keratoconus existed at that time, and that it could not have escaped observation, must be only too evident.

In the Papyrus Ebers of one hundred and ten pages, eight are devoted to diseases of the eye, although none of these diseases are described in intelligent detail.

Celsus, living from 25 B. C. to 25 A. D., in his memorable work, De Medicina, of eight books, devoted chapter six of book six and chapter seven of book seven to the eye. Here I find the first use of the term "Staphyloma." The semeiology of ancient times was very inaccurate naturally, and tinctured with rank and vulgar superstition, but it requires no great stretch of the imagination to believe that this was used as a very generic term, including all forms of corneal protrusion without fine differentiation in diagnosis, especially so, since he speaks of protrusion of the eye from relaxation of some of the internal membranes, in contrast to others resulting from injury and certain humors.

In a voluminous compilation by Aëtius, who lived in the Byzantine Middle Ages, called the "Tetrabiblon," the entire compass of ophthalmic knowledge up to that day was contained. This work, Neuberger states, is the best and most exhaustive writing on our specialty up to that time. In chapter thirty-six on "Staphyloma" is written: "There are various kinds of Staphyloma . . . it arises however when fluids accumulate beneath the cornea and the cornea obliged to yield and as it arches forward it forms a staphyloma *without tearing*." And again: "If the staphyloma becomes very large so that it extends beyond the lids, it is called 'Nail' for it is like the head of a beam nail." Further, in speaking of Myopia: "A few of them have bulbous eyes." While, I readily grant you, these descriptions will convey to us the picture of corneal ectasiæ of different forms after conical rupture, it is not at all unlikely, to my way of thinking, that under these descriptions were included cases of corneal protrusion of a hyperbolic character. The limits of this paper deny me further delay through historical recital, and I shall immediately proceed to discuss certain aspects that are more germane to the subject.

The general understanding, revealed by a search through the literature, is, that the condition is either congenital or arises about the age of puberty, yet I have never seen an infant or young child with a manifest keratoconus. That writers, speaking of the possible congenital character of keratoconus, have in mind refractive states of the eye that are especially favorable to the development of this trouble, rather than to an actually developed cone, is not improbable. That families are predisposed, and that very high astigmia and high hyperopia are favorable foundations for the condition to build upon, there is good reason for believing. Neither do I find reports of such congenital cases. On the other hand, stress is laid upon its foundation, in changes, both local and general, that arise subsequent to infantile life. Puberty is the period that most of my records indicate as the beginning of the trouble, or, at least, as the beginning

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of its very rapid accentuation.. I lay stress on the latter statement, for many patients, while vague as to the time their visual trouble began, can remember that until the tenth to the twelfth year they attended school without difficulty, and recall that then began a period of very rapid visual retrogression. That it started later, in the third decade of life, frequently becomes part of the history, and a case I shall now interject shows that a rapid development of extreme keratoconus is possible as late as the fiftieth year.

CASE

The patient, W. C. G., male, white, age 50, was referred to me May 18, 1920, by Dr. Frederick Bentley, of Seattle, Washington. Dr. Bentley wrote as follows: "He came to me with a subacute conjunctivitis, marked ciliary injection, and a partial lachrymal stenosis. There was no evidence of adhesions when the pupils were dilated. He had some photophobia and very marked lacrimation. Syringing of the ducts has always relieved this condition. A Wassermann test proved four plus, and he was referred to Dr. N. A. Johanson, who has given him six injections of salvarsan.

"A few weeks ago he suddenly developed a very marked conical cornea. I have never seen such a rapid development of the cone or such a pronounced conical cornea in a man of his age. This I think must be due to lack of tonicity due to the state of general health. This cornea has recently been flattening out again and is now approaching normal. Had the condition not shown signs of improving I was considering using a pressure bandage."

The examination in my office developed the fact that until April 15th there was nothing unusual about his right eye,—the affected eye,—and that he had vision of 6/7.5—1 with corneal astigmatism of 2 D., axis 90-180 against the rule in the left eye. There was no irregularity of the left cornea, and the lens neutralized 1.25 of this astigmation, so that with + .75 + .75, axis 180, he had vision of 6/6. The fundus of the left eye showed clear media, normal nerve head with well-defined scleral ring, incomplete choroidal ring, vessels normal, macular region, as well as region of ora serrata, normal. Tension of this eye is not hypernormal, being 22. No external disease of this eye.

The position of the eyes is normal, as well as the excursions. The man is in excellent general health. As stated, the trouble in the right eye began about April 15th, and by May 14th there was a very marked corneal ectasia. It was clear except at the apex, and this was slightly rough, in fact, nodular, and so thin that it seemed almost at the breaking point. The probe showed that the apex was very thin and the rest of the cornea normal in thickness. There was cloudiness in the apex, varying with different positions of the cone. Tonometric readings were from twelve to twenty.

Please pardon a brief digression at this point, that I may comment on certain peculiarities found in the taking of pressure by the tonometer in these cases. The readings vary as they are taken from place to place on the cone. This is not only due to probable actual differences of pressure at different parts of the cone and in some measure to its greater or less thinness, but doubtless relates itself to the difference in curve of the foot-plate of the tonometer and the curve of the cone, the one being spherical the other hyperbolic in character. Thus the sharp edge of the foot-plate touches in certain meridians and not in others, at least not with the same pressure. There was very marked reaction in this eye, there being much injection about the corneoscleral margin, and much photophobia and lachrimation.

The vision was reduced to counting fingers at one foot. Being a traveling man, I only saw him at intervals of about two to three weeks, and by the end of July there seemed to be improvement in the local conditions. The cone seemed to be diminishing slightly, but the nodular condition of the apex was more exaggerated. However, in seeing the case recently, I cannot say there is much improvement over the first time I saw him in May. There was no question of anything resembling corneal ulcer, and there has no time been any staining by fluorescin.

This case sheds no light on the origin of this rather rare condition, and is solely of value to the literature of ophthalmology in indicating that a true keratoconus may develop in an adult well along in middle life. It would offer small chance of success by operative interference at the base of the cone, as has been proposed by Fox and by A. S. and L. D. Green, in view of the extreme thinness of the apex, and the attendant and marked inflammation of the globe, at least not at this time.

The appearance of keratoconus is more common in the female. All my cases—eighteen I am sure of—have been of the neurasthenic type, or in a state of depressed nutrition. The fact that it is almost always bilateral, and found in those whose vitality has been lowered, strongly indicates the influence of impaired general health in the starting of the disease. Consanguinity may play a part, for it is not uncommon to find several members of one family affected.

Regarding the semeiology of this condition, we find indeed a striking clinical picture. It is usually bilateral, and the brilliantly projecting cornea of a fully developed case leaves no doubt regarding the diagnosis. The entire cornea from its periphery may appear as a hyperbolic curve of revolution, although it is not an absolutely true one; or the paracentral area of the cornea may be the circular base of the cone. The apex may appear irregular or perfectly conical. I have noted in the case reported a nodular ending to the apex. This may be so thin that pulsations synchronous with the heart-beat may be observed, or, as in the case of a young woman recently under my care, the perfectly even apices seemed even thicker than other parts of the corneal stroma and the probe shows no more yield-

ing of the cornea here than at the side or base. Examination with the loupe and oblique illumination often shows a grey reflex that appears as a cloudiness in the corneal tissue itself; in fact some of the cases have an actual cloudiness, and it is difficult to determine whether the phenomenon is a reflex arising from the irregular and high refraction at this point, or is due to actual change in the stroma, or of its anterior or posterior limiting membranes. The apex is usually much thinned out, and appears, in some cases, almost ready to rupture, although I never have had this occur, and Bowman states that spontaneous rupture never occurs. The apex is usually situated below—probably due to lid pressure—and one or two mm. to the nasal side. This is not invariable as I have observed. That the cornea at the apex, as a rule, is much thinned—in a case reported by Salzmann to 0.17 of 1 mm. —and that abnormal pressure has at some time played at least a small part, are probably correct. More of this later, however, for these factors alone do not fully explain the phenomena, and their presence, one or both, in many cases of no conicity adds further mystery to the etiology. The actual is not as great as the apparent protrusion. Jackson, in an analysis of his forty-five cases, thinks no case showed a prominence of over 2 mm., and it takes an extreme conicity of the cornea to project beyond and into the interpalpebral fissure. While this amount of protrusion would indicate but 6 D. of ametropia we must remember that the length of the anterior-posterior axis of the hyperbolic curve does not determine the degree of refraction. One of my patients, a man of fifty, who had rapid onset of conical cornea at about the tenth year, showed in one meridian 8 D. and in another +10 D. and with this bizarre combination V. was brought from 1/60 to 6/22. As stated, the protrusion does not always affect all of the cornea, being often a small cone situated paracentrically. I have seen cases, however, in which to all appearances the base of the cone was the base of the corneal ellipsoid, that is, arising from the corneoscleral margin, and proceeding by apparently unbroken lines of radiation to the apex. The apex being usually to one side of the pupillary center and of the normal line of vision, the patient sees through the side of the cone. In apparently similar conical protrusion of both eyes, I have noted widely different visual acuity, for example, in the right eye V. of 6/22 was obtained, and in the left almost total amaurosis.

There is a great variability in these cases from day to day and under varying light intensity, and I have observed also a noticeable change in the astigmatism from year to year. The astigmatism is usually high. I have found the best vision in some cases obtained by cylinders of from 10 to 15 D. Jackson, in seventy-nine eyes examined, found in twenty-four astigmatism of from 6 to 7 D., and in one case of 21 D. That this arises from the curvature at right angles to the lines radiating from the apex must be; otherwise such a case might show a protrusion of 7 mm. Many of these patients try all manner of expedients to improve vision, generally by change of the position of the head or of the glass. The myope may increase visual acuity by looking obliquely through his glasses, or, if without glasses, by partially closing his lids to lessen the circles of diffusion. Some compress the cornea, and thus change for the better some of the meridians of refraction of the cone, by lid compression, often spoken of as "nipping." The range of accommodation is very restricted, often being but one or two inches. Frequently p.p. is at two inches and p.r. at six inches or less.

Donders, in his classic work, says:

"High degrees strike the eye at once. Slight degrees, on the contrary, are often overlooked. The disturbance of the power of vision frequently suggests the idea of amblyopia, combined with myopia. Three cases have already occurred to me which were long treated as amblyopia. That in this instance an anomaly of refraction, and indeed astigmatism, are the cause of the diminished sharpness of sight, is evident. A complete theoretical development would be very difficult, even did we know precisely the surface of curvature, which is to be ascertained only by examination with the ophthalmometer. In high degrees the mere inspection of the curvature and profile at once satisfy the observer that the radius of curvature in the center of the cornea is much shorter, so that the rays falling thereon from each cone of light must unite much sooner. The eye is myopic, especially in reference to these rays. There must, however, be not only a difference in focal distance, but the foci are also imperfect even for small portions of the refracting surface, and, moreover, certainly do not all lie in the same axis. The high degree of astigmatism connected with this state, therefore, needs not to be further proved. It would be very troublesome if, in order to recognize slight degrees, we should be obliged to have recourse to the ophthalmometer in order to determine the radius of curvature in different parts of the cornea. For-

tunately, we have a more practical auxiliary. The already long-existing disturbance of vision leads us to resort to the ophthalmoscope, chiefly with the idea of finding the cause in the fundus oculi, and unexpectedly we discover the anomaly of the refracting surface. This had happened to me more than once. Sometimes the degree was still so slight that, even after the discovery of the true cause, the observer on taking profile view could not satisfy himself as to the state of things, so that full certainty as to the existence of the anomaly was attainable only with the ophthalmometer. How the ophthalmoscope exhibited it is very simple. In the inverted image, where there is a tolerably wide pupil, we overlook, at the same time, a rather large portion of the fundus oculi; the image, therefore, of one part or other, for example, of the optic disc, remains in the field of vision both on moving the head of the observer and on shifting the lens held before the observed eye. At the same time, however, the rays, which, proceeding from the optic disc, strike the eye of the observer, pass each time through other parts of the cornea. Now, if its curvature is irregular, the result is that the form of the disc each time alters—that it shortens in this direction, extends in that direction, and, moreover, is never seen acutely in its integrity. In somewhat higher degrees, too, the side of the conical projection opposite to the incidence of the light is darker—as if shaded."

Landolt reminds us that in this acuminate form of the cornea both catoptric and dioptric phenomena afford us valuable aid in early diagnosis, in explaining the dioptic phenomena with which we are all familiar. He states that "in the case of conical cornea we see with the ophthalmoscope a circular shadow surrounding the central part of the red fundus oculi. The shadow corresponds to that portion of the cornea which, descending from the pointed summit toward the periphery of this membrane, is but slightly convex, affects especially a conical form, and reflects light aside instead of allowing it to enter the eye."

The catoptric phenomena of the distorted images from a window, the ophthalmometer mires, and the discs of Placido are quite familiar to us all.

Regarding the pathology of these cases: it seems very little of a gross nature could be in evidence with the existence of a clear stroma, which is usually the case. Salzmann's case means very little, since the eye was a severely pathologic one throughout. This alone invalidates the etiological value of his findings of slighter changes in the membranes of Descemet and Bowman. The posterior surface of Descemet's membrane was covered with a thin layer of connective tissue, and we are far from ready to believe that this had any significant relationship to the conical cornea, since it would be impossible to have the visual betterment so often obtained by optical treatment, including the use of the contact glass, if such a condition frequently existed.

Salzmann, assuming that the ectasia can be due only to excessive intra-ocular pressure or to diminished resistance of the cornea, rejects the idea of pressure and adopts the latter view. Since conical cornea can develop late in life, although not commonly after the twenty-fourth year, why, if pressure is the usual determining factor, should we not have conical cornea as a frequent accompaniment of glaucoma? Here we frequently have intra-ocular pressure and a cornea much reduced in vitality, and both occurring, at times, in those below the age limit at which we exclude the probable onset of glaucoma. True myotics affect conical cornea favorably, yet this is largely so far as vision is concerned, the myosis acting much as in the case of improvement from a stenopeic salt.

E. Treacher Collius thinks "the ectasia is due to a thinning of the substantia propria in the center of the cornea and not to any increase in intra-ocular tension," and that opacity at the apex is due to rupture of Descemet's membrane and its endothelium, through which the aqueous filters into the cornea, causing edema and swelling. He thinks it noteworthy that the part that becomes thin is the farthest removed from any vascular supply. If the disease is due to malnutrition he thinks it of a general and not of a local character, basing this opinion on the almost constant development of the cone in both eyes.

That spontaneous ruptures of the thin cornea never occur is quite remarkable when we remember that it sometimes becomes less than 1/5 of the normal thickness of 1 mm.

Bowman states that the abnormal transudation of fluid which takes place through the apex, preserves the normal intra-ocular pressure. I have found in all my cases subnormal pressure, as low as 12 and not above 22 on a basis of 45 normality. Hulke found intact Descemet's membrane in its center, and an accumulation of lymphoid cells in the superficial layers under Bowman's membrane. That very charming old gentlemen, Mr. Braily of Guy's Hospital, London, found epithelial lacunæ existing in the extirpated

central rings, and the stroma infiltrated with elongated cells. Elschnig compares a keratoconus to an aneurism in which the primary lesion is a lacuna in the elastic tissue of the artery.

The consideration of the treatment of this condition is at least interesting, even though the results are, as yet, not entirely satisfactory. For the purpose of convenience we may properly consider the treatment under four headings: first, medical; second, optical; third, ortho-optical; fourth, and last, surgical.

The medical treatment takes heed of the usually lowered nutrition of these patients, considers the matter of favorable working conditions for the person and for the eyes; and, locally, meets all indications, insofar as strain and inflammation of the eye are concerned. If we bear in mind that these cases may have their origin among our high and eccentric refractions, we may well institute prophylaxis, and be rendering the finest service our specialty can render. Gonzales, in very recent literature, reports a case of conical cornea arising from vernal catarrh of the bulbar type, in a girl of ten years with normal refraction. The condition developed rapidly after the onset of this disease, the more myopic meridian being 15 D., the less myopic 13 D. He thinks the circumcorneal vegetations affected the nutrition of the cornea. Cure of external disease, for example, vernal catarrh, as in the case of Gonzales, or, in fact, any attending irritability that may lower the nutrition of an already and normally low tissue, like the cornea, is indicated. Rest for the eyes, outdoor life, and normal, healthful habits of body and mind, are essential. In developed cases myotics are about the only drugs of any value, and at times the pressure bandage has been beneficial.

The optical treatment of the condition is interesting. It is chiefly, as pointed out long ago by Dr. James Wallace of Philadelphia, a matter of empiricism, and is to be mixed with the fullest measure of patience on the part of both patient and ophthalmologist. Wallace, in a communication to the University Medical Magazine of many years ago (1889), called attention to the curious phenomena found in the refraction of these cases. He precedes his examination by a course of myotic treatment, and finds the vision benefited by the most bizarre and unusual cylindrical combinations. As an example of this fact one case of mine, already referred to, obtained V. of 6/22 with a + 10 cylinder inclined to a — 8 cylinder at unsymmetrical axes. Much relief from strain and headache often accompanies the visual improvement from such combinations. No rule governs such refractions, and the subjective tests give no equivalent values in our testing. Rachlmann tried to neutralize the refraction of the cone by hyperbolic glasses, but it was not satisfactory, since the curvature of the surface of the cone, not being a perfect surface of revolution, differs from its one meridian to the other.

Sir John Herschel long ago proposed to correct the refraction by placing over the cornea a transparent shell, or cup, the so-called "contact glass." This was tried by others, but, on account of the irritation caused by the glass, fell into disuse, although it notably improved vision.

I wish, however, in order to add to your interest in this matter, to present the substance of some gleanings from recent German literature, regarding the value and practicability of the contact glass. In the local sitting of the Würzberg Medical Society, reported in the Münchener Medizenische Wochenschrift of December, 1919, there was demonstrated a case showing the effectiveness of the "contact glass." In a twenty-one-year-old girl with double-sided conus since her 12th year, and with vision of 1/60 and no improvement by glasses, the contact glass improved vision to 1/4 for distance and to 1/2 for near. It was stated that the daily use of the glass was without fatigue. It was not stated, however, how long she had worn it, and it was the subject of speculation before the Society how long it might be worn without discomfort. In the same journal of April 25, 1916, Erggelet reports the case of a high school pupil of sixteen who had bilateral keratoconus since her third year (the youngest case I have yet seen reported), but he fails to state the degree of development at that age. No betterment by glasses. Vision of 1/60 by the use of the contact glass and with refraction of + .50 = + .50, axis 180, became normal, but the left, owing to disturbance of the cornea, attained V. of 5/7 to 5/10 only. The glass, filled with Kochsaltz solution, the patient could remove and replace at will. It does not move or fall out, and moves with every ocular excursion. While these recent reports are favorable, the general impression in the profession is, that irritation follows in all cases, sooner or latter. When the glass was worn forty-eight hours in the case just reported, much irritation followed. Some other cases reported showed that the children used the glass from 9 A. M. to 12 M. and from 3 to 5 P. M. while at school, and had great assistance from it, the glass being used only at these periods.

It is to be observed, so far as the surgery of

this condition is concerned, that the earlier surgeons confined their efforts to intra-ocular operations, while surgeons of more recent times have more successfully operated on the cone itself. A combination of these two fundamental principles is frequently of advantage. Adams recommended the breaking up of the lens on much the same principle that we now operate for high myopia, to throw the too convergent rays further back. Many of the earlier surgeons advocated, and performed, operations on the pupil, such as iridectomy and iridesis. Graefe advised removal of the epithelial layer of the apex and, after this, followed cauterizing with the mitigated stick. Bowman tried removal of a disk in the apex by the trephine. Bader reported a number of cases of excision of an elliptical piece of the apex. These operations, proposed and executed, on the end of the cone, were followed so frequently by severe reaction and loss of the eye that they properly fell into disuse. In more recent surgery, cauterization of the point of the keratoconus has been much done and with success. I have performed this but once, and, while the reaction was not excessive, the result did not justify so risky a procedure. The cautery used is of disk form. Some, however, use a point cautery, and puncture the apex.

H. Knapp and Sattler, at the 1900 meeting of the A. M. A., presented the subject of treatment up to that time in a most exhaustive manner. This treatment, it may be said, was almost entirely the use of the cautery. Knapp advised it and reported five cases in which he had used the cautery. It is to be noted, however, that the usually high cylindrical correction followed the procedure, and that the end-results as regards vision did not seem greatly superior to the optical treatment alone. Sattler, in his article, as well as those who participated in the discussion, notably the late Dr. Risley, was very conservative and was constrained to avoid radical treatment of the apex by the use of the cautery. To my way of thinking the outstanding feature of ophthalmic surgery of today is the attacking of the condition by operations at the base, rather than at the apex. The latter is so thin and so poorly nourished that it is a most unfavorable part to attack by such rough measures, and is attended by some considerable risk.

Within the present year two very rational procedures have been proposed, the one by Fox of Philadelphia, the other by the Greens of San Francisco. Wiener, at the A. M. A. meeting of 1917, proposed excision of an elliptical area of the cornea at its base, or near it, and the approximation of the edges of the wound by sutures passed through small gold strips. I have seen Dr. Wiener perform this operation, and I have done it many times upon the pig's eye. A linear scar remains, but it is not disfiguring. Very satisfactory visual improvement followed in these two cases, and he has told me this has also been the case in a few subsequent operations of like character. I think the procedure a safe one, and while the plates are allowed to remain for eight or nine days little irritation follows the operation or the presence of the plates. Fox's operations, to my mind, are the most rational surgical procedure yet proposed, and his early results have been satisfactory. The operation is performed as follows:

"The conjunctiva is grasped a trifle below the inferior corneoscleral margin, slightly to the nasal side, and a Graefe knife is introduced into the cornea about 3 mm. above its horizontal meridian with the cutting edge inclined directly forward so as to bisect the cornea straight across, parallel with the horizontal meridan, but above it. This requires considerable care and the exercise of good judgment, otherwise the pupillary area will be obscured by the final effects of the operation. It is better to be too high than too low. The inferior segment of the cornea is then depressed gently by the iris forceps, which is then inserted beneath the superior corneal segment so as to grasp a portion of the iris. This is then withdrawn and cut off by the de Weckker scissors. The upper margin of the inferior corneal segment is then grasped by specially constructed, small, straight, rather smooth forceps, turned slightly outward, and a semilunar strip of cornea is removed from the edge by means of small, strong scissors curved on the flat (also especially devised for this procedure, after the model of Lagrange). This strip of corneal tissue is about 2 or 3 mm. wide at its thickest portion, from 5 to 7 mm. long, and involves the entire thickness of the cornea. A fine silk suture is introduced through the adjacent edges of the original incision on either side of the pupil and then tied in the following manner: Specially constructed forceps, with an incomplete fenestrum at the end of either blade, is used to grasp the margin of the upper cornea, which is thereby everted. While it is everted the needle carrying the suture is passed through the fenestra and the cornea tissue. The forceps is released, the suture being disengaged by slipping through the break in the incomplete ring at the distant extremity of the

forceps. This is repeated on the other side of the pupillary area in the upper margin of the corneal incision. The sutures are then introduced in the lower segment of the cornea in a similar manner and tied. Atropin is instilled. The eye is irrigated, and the usual dressing applied. There is very little reaction, as a rule, and the corneal sutures are removed at the end of eight days." It appeals to me strongly, and I now have a patient upon one of whose eyes I expect to operate. I shall, however, modify Fox's operation by using the Wiener fold strip or a small Kuhnt flap and passing my suture through the superficial edge of the cornea only.

There has just appeared in the June issue of the *American Journal of Ophthalmology* the description of an operation proposed by A. S. and L. D. Green of San Francisco. The operation upon the bulbus is preceded by a canthoplasty, done to eliminate the lid pressure so often attendant upon these cases. The operation upon the eyeball is practically a Lagrange for glaucoma. "A fold of conjunctiva is seized about one centimeter from the limbus above, incised horizontally and undermined as though performing an Elliot operation, splitting the cornea with a slightly dulled keratone for a distance of about 2 mm. The conjunctiva is then pulled down and a small Graefe knife introduced at the limbus as for a cataract operation, coming out at the opposite side, the length of the incision being about 10 mm. The knife is carried slowly upward in the anterior chamber close to the root of the iris, leaving a crescent of sclera, about 8 mm. long by about 3 mm. wide, attached to the conjunctiva. This shelf of sclera is cut off with delicate straight scissors. An iridectomy is next performed. The pillars are then straightened out, one suture inserted to unite the conjunctiva and the eye bandaged." This operation has little claim to originality, and does not appeal to me overmuch.

Gunert of Bremen and Glovine of Moscow have combined cauterization with conjunctival keratoplasty, after the manner of Kuhnt, by sliding conjunctival flaps. Grunert's operation appears extremely severe and, while ingenious, I believe it is too radical. He cauterizes deeply into the parenchyma in the form of a triangle, and two days later incises by a Graefe knife from the apex to the base through the cauterized area. There is complete collapse of the cornea. He then places a conjunctival flap over this and fixes by suture. Before the operation, extreme myosis is induced by eserin. The patient, after bandaging, is placed in bed for six to eight days. Four weeks after operation the conjunctival bridge is restored to its original bed. Elschnig advocates the cautery, and believes much depends upon rapid vascularization of the cauterized area. To bring this about he connects the cauterized area of the apex by a superficial cauterization running in a broad strip to the corneal limbus.

I am very conscious that I have very inadequately presented a subject of singular interest and one that, to my mind, is one of the outstanding surgical problems in the surgery of our specialty, of the present. To the writer it is most attractive from many aspects, be it that of the onset, the etiology, or the optical or the surgical treatment. I especially stress the latter, and believe interesting possibilities for our surgical success are to be found about the base of the keratoconus rather than the apex. It seems to be better surgery, and founded on better optical and physiological foundations. Finally, the points to which I would direct your attention are the following:

1. That while the greater number of the cases arise at about the 10th to the 15th year, and very likely are but progressions of milder ectasiæ not previously discovered, the disease may appear as late as the fiftieth year, with rapid onset in an apparently healthy eye.

2. That general malnutrition, as well as conditions of a local character lowering the vitality of the cornea, is a factor of first importance in its causation.

3. That the high hyperopia—often of 6 to 10 D.—found at the base of the keratoconus indicates, together with the history of asthenopia, that eye-strain in very early life may play its part, and that we may meet important indications regarding the treatment of this condition by the earliest attention to these high refractive disorders.

4. That subjective tests with the trial case are often rewarded by gratifying improvement by the use of high cylinders used empirically and with much testing and patience.

5. That the factor of lid pressure, both as a preventive measure in the retarding of the conus and its effect on the refraction must be kept in mind.

6. That operations upon the base of the cone offer greater probability of benefit and are not so threatening to the nutrition of the cornea as when trauma is imposed upon the apex.

7. That local and general malnutrition, as well as tissue change, probably plays a more direct part that does intra-ocular pressure.

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STERILIZATION

The old familiar "sterilization" bill has reappeared in the legislature of Minnesota, and its adherents want to sterilize the insane, the criminal, and the feeble-minded so that they may not propagate their species.

Such a law has been in operation in Indiana for some time, and in a few selected cases the sterilization of the male has been done without comment. No one thinks anything about it, and least of all the man who is sterilized. But a sterilization of the selected few does not solve the situation. There is the woman to be considered, and the sterilization of a woman is quite a different matter from the sterilization of a man. She, if she must be sterilized or desires to be sterilized, must have her abdominal cavity opened, and the success of such a measure, involving a capital operation like a laparotomy, is not to be lightly considered. There are probably as many women who should be sterilized as men, and it is not always the woman's fault that she propagates her kind. It is not always the insane man, the criminal, nor the feeble-minded that impregnates her. It is quite as likely a man who has control of himself, who undertakes this process because it is a comparatively simple one, that is, impregnating a feeble-minded woman. That some safeguard should be thrown around these classes is undisputed, but it would require hospital facilities of so enormous an extent that even the people of one state could not be incarcerated therein. Consequently, some other method will have to be devised to prevent the increase of the defective classes—whether they are mental or nervous in type. Of course, there is no such thing as a criminal class. They belong to an entirely different nomenclature. They are the men and women who, through association and environment, with perhaps an instability behind it, desire to become criminals. Those who set out with such a definite purpose in mind may belong to the defective classes, consequently they are beyond the pale of the law. They cannot be regulated, and they cannot be gathered together, even for sterilization purposes.

ANTIQUATED LAWS

The attention of our readers is called to the comments on two laws, one entitled "Special Privilege" and one "The Limitation for Malpractice Suits," which will be found in another part of this issue (under Miscellany). They are well worthy of careful consideration. For instance, it is permissible, under the present laws, for a patient to sue a doctor for malpractice within six years after the date of the charged malpractice and the arguments presented in this issue fully cover the point. Then, too, the argument for the elimination of "Special Privilege" is so old-fashioned and "old-timey" that physicians should have better protection. Of course, it is definitely understood that it would not be abused, but only used in cases of malpractice suits and in the testimony in personal injury cases before the court.

In justice to all concerned, including the physician, and for the information of the court and the jury, there are many privileged communications to be given out because they are common property. And the old idea that everything that is known between the patient and the doctor should be excluded from testimony in court is unfair, as there are numerous instances and pathological conditions that should be recorded and may be explained by the physician to the court without violation of any real confidences.

Of course, it is very doubtful whether the latter bill gets through; but it is to be hoped that it will, for the legal profession is rather apt to hold to it because it may interfere with some of their legal processes. Then, too, it is frankly admitted that medicine has made more advances and more scientific strides than has the legal profession. The lawyers still cling to the old ideas of three hundred years ago, which are

looked upon as foundation stones for the courts of law, but not necessarily for the courts of justice.

THE SHEPPARD-TOWNER BILL

This bill (H. R. 10925), which was introduced into Congress on December 5, 1919, is for the public protection of maternity and infancy, and provides a method of co-operation between the Federal government and the several states. It also provides for the instruction in the hygiene of maternity and infancy, and for making such studies, investigations, and reports as will further the administration of the act. Incidentally, it authorizes the Children's Bureau to form an advisory committee consisting of the Secretary of Agriculture, the Surgeon-General of the Public Health Service, and the Commissioner of Education. The Bureau is authorized to expend 5 per cent of the appropriation for administration purposes and to pay $10,000 annually to each state for administration expenses; and the remainder of the appropriation is to be divided among the states in proportion to their population, provided each state appropriates an amount equal to that received.

Under the bill it suggests or infers that each state has a child welfare or child hygienic division in its state health agency, and the state health authorities shall administer the act.

So far the bill has received the approval of public agencies, women's clubs, and other committees or associations interested in the provisions of the act. At the time of the hearing before the committee on December twentieth to twenty-ninth, inclusive, 1920, the old Medical League of Freedom was suddenly galvanized into activity, and they presented their arguments against the bill. One of the objections seems to be regarding the clause in the bill that pertains to the examination of the pregnant woman to determine whether or not she has syphilis; and, if she has, the League of Medical Freedom protests against the administration of neosalvarsan. Take, for instance, a woman ignorant of her own health state, who has perhaps contracted syphilis from her husband or elsewhere, whose pregnancy is seriously threatened, an examination of the blood would show, perhaps, at least in a certain number of cases, a positive blood Wassermann. This means a continuation of an active syphilis in the mother or the bringing forth of a syphilitic child. Under such circumstances it is reasonable to suppose that one or perhaps four intravenous injections of neosalvarsan might save both the mother and the child. This, of course, is to be done by the state or municipality in which the examined woman resides. It is presumed, too, that the Medical League of Freedom or other objectors feel that neosalvarsan is a dangerous thing to use,—that it is introducing a poison into the system, which may kill both mother and child. Of course, these objections are puerile, and would be advanced only by people who belong to antimedical organizations.

A few experimental clinics or a few histories given by men versed in this method of prevention would probably further advance the popularity of the bill.

The other objection is one noted in an editorial in the *Journal of the American Medical Association* for February fifth, and is concerned mainly with the large sum of money from the Federal treasury to be pro-rated to various states, provided the state appropriates an equal amount; and, further, that the care of venereal disease and the improvement in the education and the development of physical training belong to the state and local authorities, and not to the Federal authorities. This objection may be the one which will eventually kill the bill, because it means an increase in Federal taxes and a corresponding increase in state taxes.

The editorial is particularly interesting because it picks Minnesota as a state in which this bill might be worked out. For instance, it says that Minnesota would receive $10,000 for administration expenses; with its additional pro rata, probably $30,000 in all, provided the legislature appropriates $30,000. This would give the state department of health $60,000 for maternal and child welfare work. The editorial goes on to say that the state could not expend this sum of money, one-half of which is its own, until its plans had been approved by the Children's Bureau in Washington.

It is hoped that neither of these objections will be used to defeat the bill, for it seems to have received a great deal of consideration and friendly comment, and is backed by thinking people.

THE MINNEAPOLIS GENERAL HOSPITAL SITUATION

The papers announce the withdrawal of the resignation of Dr. Walter E. List, the present superintendent of the Minneapolis General Hospital. This, for the time being at least, settles all

unfortunate controversy, and makes it possible for the General Hospital to go on in its effort to do strictly scientific work. Then, too, it shows the character of Dr. List. Had he withdrawn at this time and left the place open to political invasion it would have been a serious thing for the city of Minneapolis.

The withdrawal of his resignation was prompted, too, by the fact that there was a great stir as to the authority between the Board of Public Welfare and the Civil Service Commission, and an injunction was secured against the Civil Service Commission in order to admit the former superintendent of the General Hospital, Dr. H. O. Collins, the only applicant certified before the Civil Service Commission.

The probabilities are now that most of the differences among those interested in the General Hospital activities will be adjusted, and that the various explanations which have been given out regarding the formation of the staff and the conduct of the Hospital by the general staff, the division of the staff between the University and the city at large, will be found to be advantageous to the patients in either service. As a matter of fact, there has been no friction between the two staffs, and there need be none under the able guidance of Dr. List.

MISCELLANY

TIME WITHIN WHICH SUITS FOR MALPRACTICE MAY BE BEGUN IN MINNESOTA

Now that the Legislature is in session, the members of the medical profession throughout the state ought to give serious attention to the matter of remedying a defect in the laws of Minnesota with respect to the time within which suits for malpractice may be commenced.

Under the laws as they now stand, actions for "libel, slander, assault, battery, false imprisonment, or other tort resulting in personal injury" must be commenced within two years after the accrual of the cause of action. By another section of the statutes it is provided that actions for "criminal conversation, or any other injury to the person or right of action not arising on contract and not hereinafter enumerated" shall be commenced within six years. Upon the face of these statutes, one would suppose that an action for malpractice, which is really founded on a charge of negligence, ought to be included in the two year statute. However, some years ago our Supreme Court, construing these statutes, held, by a divided court, Justice Mitchell dissenting, that actions for personal injuries, founded on negligence, are governed by the six year and not the two year limitation. Since that time all personal injury actions, including malpractice actions, have been treated as governed by the six year statute.

The medical profession, as a class, are, of course, not concerned with the question as to what shall be the limitation of time within which actions for personal injuries generally shall be brought. But they are vitally concerned in the question as to what shall be the limitation of time within which actions for malpractice shall be brought. To permit such actions for malpractice to be commenced after a lapse of six years, from the time that the patient was treated, often results in great injustice to the physician or surgeon sued. In most all of such cases, nurses are vital witnesses. In the very nature of things, considering the fact that nurses are usually temporarily employed, or are merely serving their apprenticeship, and move about to all parts of the country before they settle down to some permanent employment or marry, it often occurs that they are unavailable as witnesses when the trial is long delayed. Very often the hospital records are vital as evidence in behalf of the medical man sued, and these cannot be used unless the nurses who made them are available as witnesses. Any person who has a meritorious malpractice case can, without hardship, arrange to start such case within a period of two years.

In many states the period within which a suit for malpractice must be commenced is even less than two years. In Alabama, California, Delaware, Kentucky, Louisiana, Ohio, Tennessee, Texas, Virginia, and West Virginia, the period of limitation, for the bringing of malpractice cases, is one year. In Arizona, Colorado, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Michigan, New York, North Dakota, Oregon, Pennsylvania, Rhode Island, and Wisconsin, it is two years. In various other states it is three or four years. In one state it is five years. And in only six states in the entire Union is the period six years. Thus in the vast majority of states, the sound reasons for requiring suits for malpractice to be commenced within a reasonable period of time, not exceeding two years, has been recognized. Medical men throughout the state should unite to bring this matter to the attention of the members of the Legislature, to the end that this defect in the laws of the state should be corrected, in justice to the medical profession.

TO REFORM A BAD STATUTE WORKING A HARDSHIP TO PHYSICIAN

Regardless of the skill, care, or standing of a doctor, the possibility of a malpractice case is an ever-threatening menace to every member of the profession. It is a menace, perhaps not, fully appreciated except by those who have participated in such cases as defendants or witnesses. More recently the number of such cases seems to be showing a marked increase. Reports show that in Hennepin County alone there are pending upon the calendar for the present term of court over forty such cases. Assuming a proportionate number for Ramsey County, St. Louis County, and the country districts, and bearing in mind that the list is being steadily increased by the quite regular institution of new cases, it will be readily seen that such cases, and the principles governing the trial thereof, present an important problem for the medical profession.

This article is not concerned with the reasons for the institution for such suits or the apparent increase thereof. Our purpose is simply to direct attention to one vitally important matter affecting the opportunity to

have the questions involved in such lawsuits fully and fairly litigated. An existing statute of the State of Minnesota, as applied to these cases, frequently makes it very difficult to present fully the defendant doctor's side of such a case, and results in unwarranted hardship and injustice. The statute referred to is one which, in substance, provides that a physician or surgeon shall not, without the consent of his patient, disclose any information acquired in a professional capacity or give any opinion based thereon. This creates what is commonly called the "statutory privilege" in favor of the patient. As applied to malpractice cases it means that, if he sues Dr. A. for malpractice, he can prevent Dr. A. from using the testimony of the patient's prior or subsequent attending physicians, no matter how necessary such testimony may be. To illustrate by concrete cases:

A malpractice case was recently tried in this state, wherein plaintiff alleged certain negligence in an operation performed in the summer of 1918, and serious effect upon her health as a result thereof. It was of the utmost importance that the defendant doctors show that her existing condition of health was due to the disease from which she was suffering at the time of the operation, and to that end to show that such disease was of long standing. The plaintiff denied that it was. To refute that, defendants' attorneys called a doctor who had attended her more than a year before the operation, to testify that she was then suffering from the disease in severe form. Her attorneys objected, claiming the statutory privilege, and the court was compelled to exclude the proffered testimony of the prior attending physician, though it was vitally important in showing the truth concerning the case.

In another malpractice case also recently tried in this state, a doctor who had several times treated a patient for a particular disease, over a period of years, finally referred the patient to a specialist, who undertook the treatment, largely on the history of the case as given by the prior attending doctor. Later, the patient sued the specialist for alleged malpractice. It was of great importance for him, in meeting the charges, to show the history of the case as observed and as given to him by the referring doctor. The defending doctor could not testify as to what the referring doctor told him of the history of the case, because that was objectionable under a general rule of law excluding hearsay testimony. When the defending doctor's attorneys produced the referring doctor at the trial, and offered his testimony, the so-called "statutory privilege" was again invoked by the patient's attorneys, and the court excluded the testimony.

Both these cases are but illustrative of similar situations which frequently arise in these cases, and permit the patient to foreclose an honest inquiry into the full merits of the case. No question of professional ethics is involved, for the reasons which seal the doctor's lips for the benefit of his patient are gone when the patient himself goes on the witness stand and voluntarily makes public his version of his ailments and physical condition. In such a case, if his version is incomplete, or incorrect, the doctor whom he is suing should be permitted to show it by the testimony of any doctor who has knowledge of the facts.

To remedy the obvious injustice of this situation, a bill is being introduced in the Legislature, at its present session, to amend the statute involved, so as to eliminate the so-called statutory privilege in malpractice cases. Such amendment cannot injure any patient having a meritorious malpractice case; on the other hand, it is vitally necessary to prevent injustice to the profession, and to aid in disclosure of the truth, in such cases.

To be sure, the same objection to the statute may be urged in ordinary personal injury cases. In a suit against a railroad, or against an automobile owner, for personal injuries, it may be important for the defendant to introduce the testimony of the plaintiff's doctor to show that the injuries claimed, or part of them, had existed prior to the accident involved. And the courts, in more recent years, are beginning to realize, and openly concede, that the statute, in such cases, is frequently abused, and used to suppress the truth, but point out that the statute must be followed, and any remedy lies with the Legislature. But the abuse is more apparent, and results in more marked injustice, in malpractice than in other personal injuries cases. A malpractice case more vitally involves the plaintiff's prior condition of health, and prior medical treatment, than any other class of cases. The propriety of the treatment by the defendant doctor, upon which the whole question of liability turns, may depend upon such prior history, and the treatment is frequently undertaken by the defendant doctor upon the history and diagnosis of another. Yet such history and diagnosis are excluded from the case, as the statute now stands. Such cases, furthermore, involve a serious effect upon the professional reputation of the defendant doctor, something not involved as to a defendant in other classes of personal injury cases.

The proposed amendment, involving no injustice to the patient, and designed only to facilitate the inquiry for the truth in such cases should call for the active support of all members of the profession in directing the attention of the Legislature to the bill in question, and appropriately urging its passage.

THE LIMITATION OF THE WASSERMANN TEST

A Circular From the Minnesota State Board of Health, Division of Venereal Diseases, Co-ordinated With the United States Public Health Service, University Campus, Minneapolis.

There has been a great deal of misunderstanding concerning the Wassermann test. Too many doctors do not realize that this is not a specific test, and depends not upon the presence of the spirochete in the human body, but upon the presence of certain other bodies in the blood serum, which are presumed to be present only in syphilis. When the Wassermann test was first introduced all the profession were inclined to charge apparently conflicting reports against the technic of a certain laboratory, and did not realize sufficiently the frailty of the test itself, regardless of the laboratory and its technic. This holds true today of a large number of the profession. As long as the test is done by human beings there is always the chance of human error. With an expert technician this is reduced to a minimum; yet the fact still remains that there are conditions, some of which we do not know of, which may produce a negative today, and a positive tomorrow or within a few days, with the same patient's serum and exactly the same technic. This is not necessarily due to error, but may be due simply to the frailty and non-specificity of the test.

Owing to the fact that the Director personally has worked with the Wassermann test for many years in connection with his own private work, and realizing many of the problems which would have to be met in a public laboratory, every effort has been made to safeguard the test and reports from the State Laboratory. It is for this reason that we have consistently refused to give out one, two, three, or four plus reports. It is for this reason that we have insisted upon physicians returning to us the so-called "follow-up" in order that the very closest possible association might exist between laboratory and clinician.

Recently several physicians have called our attention to conflicting reports; in some cases a negative and positive on the same patient's serum, submitted in two parts under different names; in others a positive this week and a negative next week, or vice versa. Sometimes we have been able to give an explanation due to the condition of the specimen upon its arrival; in others no explanation has been possible.

We have no objection to this sort of checking,—indeed we welcome it, but we trust that it will be done in a spirit of constructive criticism, and that we will be given the results of the check in order that we may do everything possible to prevent this sort of thing, and check it when it does occur. It is for this very reason that we have repeatedly urged all physicians to repeat their tests upon questionable cases, and not to accept the Wassermann test of any laboratory as a basis of diagnosis, unless it is consistently positive or negative.

NEWS ITEMS

The new Deaconess Hospital of Bozeman, Mont., was opened last month.

The Windom Deaconess Hospital of Windom, succeeded the Druse Hospital of that city last month.

The Mineral Springs State Tuberculosis Sanatorium at Cannon Falls will build a nurses' home in the spring.

The bill in the Minnesota Legislature for licensing Osteopathic surgeons met a disastrous defeat in the House.

Dr. Arthur E. Vik, a 1920 graduate of the University of Minnesota, has become associated with Dr. Alexander Ridgway, of Belgrade.

Dr. J. D. Lewis, of Minneapolis, has been appointed chief of the eye, ear, nose and throat service of the Minneapolis General Hospital.

Dr. E. W. Humphrey, of Moorhead, was re-elected president of the Clay County Public Health Association at its annual meeting last month.

The St. Louis County Medical Society is endeavoring to consolidate all health agencies doing relief medical work in Duluth in order to do better work, prevent waste, and avoid imposition and duplication of work.

Dr. Ralph St. J. Perry, of Minneapolis, has resigned from the U. S. Public Health Service and will hereafter devote his entire time to his private practice.

Dr. F. R. Walters, of Moose Lake, is endeavoring to form a company to build a hospital in that city, to replace the one destroyed by the forest fires.

Dr. Walter E. List, superintendent of the General Hospital of Minneapolis, has withdrawn his resignation, and an enforced armistice automatically exists.

Dr. H. W. Walters, a fellow in the Mayo Foundation at Rochester, was married last week to Miss Phoebe Mayo, daughter of Dr. W. J. Mayo, of the Mayo Clinic.

Surgeon Taliaferro Clark, of the U. S. Public Health Service, is soon expected in Minneapolis to assist Dr. Harrington, of the City Health Department, in a public school survey.

It is now announced that the American Medical Directory will be out early in March, the delay in its issue being due to the vast number of changes of addresses of medical men.

The next annual meeting of the North Dakota State Medical Association will be held at Fargo on May 26th and 27th, and not on the dates (May 12th and 13th) named in our last issue.

A biologist and a psychologist are wanted by the U. S. Public Health Service. The former will be paid from $2,500 to $3,000 a year, and the latter $1,600 to $2,200, each with maintenance.

The Hibbing friends of Dr. C. F. Morsman, who formerly practiced in that city, are pleased to learn that he has been elected president of the Spokane Academy of Medicine, where he is now practicing.

Dr. Frederick J. Duggan, of Grand Forks, N. D., died last month at the age of 71. Dr. Duggan was a graduate of the University Medical School of Toronto, class of '78, and came to Grand Forks in 1880, in pioneer days.

Dr. Will E. Chapman, of Litchfield, died on February 5th at the age of 64. Dr. Chapman graduated from the College of Medicine of the University of Vermont in the class of '79, and had practiced over forty years in Litchfield.

Dr. A. B. Moore, of the Mayo Clinic Staff, is regional chairman for Minnesota for the Uni-

versity of Virginia Centennial Endowment Fund. Dr. Moore is a graduate of the Medical School of the University of Virginia, class of '07.

Dr. E. T. Reeve, who has been connected with the Sievertsen Clinic of Minneapolis for several months, has resumed his practice at Elbow Lake. Dr. R. I. Stewart, of Wendell, had charge of Dr. Reeve's practice during Dr. Reeve's absence.

At the annual meeting of the Kotana District Medical Society of North Dakota, held last month at Williston, N. D., Dr. H. C. Windel, of Williston, was elected president, and Dr. H. T. Skovholt, of the same city, was elected secretary.

The Division of Venereal Diseases of the State Board of Health has opened another evening dispensary in Minneapolis. The clinic is at the Wells Memorial Dispensary, 116 North Eleventh St., and will be open Wednesday and Saturday evenings.

The clinics held in Superior, Wis., by the Extension Division of the University of Wisconsin, were a great success. Prominent medical men gave lectures and clinics that were considered of high educational value, and the attendance was large.

Dr. William A. Hunt, of Northfield, died on January 27th at the age of 63. Dr. Hunt was a graduate of Michigan, class of '82, and had practiced in this state thirty-eight years. He had been mayor of Northfield and was always prominent in medical circles.

Dr. J. S. Meade, who was a pioneer physician and mining engineer in Colorado and Montana, died last month in California at the age of 80. He was a Civil War veteran. While in Montana he practiced at Bannack, and was a leading citizen in the early days of the state.

The Cheyenne Valley Medical Society of North Dakota held its annual meeting at Valley City, N. D., last month, when the following were elected officers for the current year: President, Dr. Lief Amklov, Cooperstown; vice-president, Dr. C. E. Spicer, Valley City; secretary and treasurer, Dr. S. A. Zimmerman, Valley City.

The Northwestern District Medical Society of North Dakota held its annual meeting at Minot, N. D., on January 27th, when the following officers were elected: President, Dr. S. M. Johns, Velva; vice-president, Dr. P. A. Nestos, Minot; secretary-treasurer, Dr. A. Carr, Jr., Minot. The meeting closed with a social session participated in by the ladies.

A recent editorial in a Duluth paper sets forth, in strong language, the inadequate hospital facilities of that city. It states that the ratio of hospital beds to population is one bed for 283 people, while in Minneapolis it is one bed for 150, and in St. Paul one bed for 127 people. Such discrepancies are bad for the cities with inadequate hospital facilities.

St. Andrews Hospital of Minneapolis is the first hospital to announce an increase in its capacity due to the closing of Asbury to civil patients. St. Andrews is now a thirty-five bed hospital, and it is planned to put on an addition to the building to increase the hospital's capacity to 100 beds. The addition will cost between one and two hundred thousand dollars.

The Helena Clinic, of Helena, Mont., has moved back into its remodeled building, and now enjoys pleasant and commodious quarters. The Clinic was organized several years ago by Drs. Brooks and Lanstrum, of Helena, and is now composed of the following physicians: Drs. O. M. Lanstrum, Rudolph Horsky, John L. Treacy, B. E. Wiley, and Arthur Jordan.

The Asbury Hospital of Minneapolis is now known as United States Public Health Service Hospital No. 68. Dr. H. M. Bracken, for many years the executive officer of the Minnesota State Board of Health, is Medical Officer in Charge, and Dr. P. W. Wipperman and Dr. W. S. Bentley constitute the administrative staff. In addition to the administrative staff, there is a staff of attending specialists in medicine and surgery. This staff consists of the following Minneapolis men: surgery, Drs. A. T. Mann, J. Frank Corbett, and Paul Brown; medicine, Drs. J. F. Avery, Floyd Graves, John F. Smith, and George F. Schmidt.

Two registered and experienced nurses, Miss M. Kennedy Spencer and Miss E. J. Swensen, have opened in the Syndicate Block in Minneapolis what they call "Downtown Surgery." They have eight or ten rooms in this downtown building fully equipped for minor surgical work and for the use of physicians and dentists when they need hospital conveniences and yet do not want to take their patients to a distant hosnot want to take their patients to a distant hospital. Miss Swensen is an experienced hospital anesthetist, and Miss Spencer is an experienced operating-room supervisor. The rooms will be opened from 7 A. M. to 6 P. M. The scheme promises well for physicians and their patients.

PHYSICIANS LICENSED TO PRACTICE IN MINNESOTA AT THE JANUARY (1921) EXAMINATION

BY EXAMINATION

Name	Where and When Graduated	Residence
Berge, Hjalmar Melanchton	U. of Minn., M.B., 1920	General Hospital, Vancouver, B. C.
Bicek, Joseph Frederick	U. of Minn., M.B., 1920	Miller Hospital, St. Paul
Boman, Paul G.	U. of Minn., M.B., 1920	329 Union St., Minneapolis
Boynton, Ruth Evelyn	U. of Minn., M.B., 1920	Univ. Hosp., Minneapolis
Boquist, Harold Samuel	U. of Minn., M.B., 1920	2210 Polk St., Minneapolis
Brunkow, Clarence William	U. of Minn., M.B., 1920	St. Mary's Hosp., Minneapolis
Churchill, Asa Glenn	U. of Minn., M.B., 1920	684 Summit Ave., St. Paul
Critchfield, Ralph J.	U. of Minn., M.B., 1920	1028 7th St. S., Minneapolis
DeJong, Georgiana	U. of Minn., M.B., 1920	Faribault, Minn.
Eppard, Raymond Martin	U. of Minn., M.B., 1920	Duluth, Minn.
Flocken, Charles Frederick	U. of Minn., M.B., 1920	2624 Emerson Ave. S., Minneapolis
Gearey, Verne Smith	U. of Minn., M.B., 1920	1827 Laurel Ave., St. Paul
Gerber, Milo P.	U. of Minn., M.B., 1920	Argyle, Minn.
Gourdeau, Adolphe Edward	U. of Minn., M.B., 1920	Univ. Hosp., Minneapolis
Herbolsheimer, Albert John	U. of Minn., M.B., 1920	Wadena, Minn.
Hirshfield, Frank R.	U. of Minn., M.B., 1920	1112 18th Ave., Minneapolis
Kennedy, Roger Louis Joseph	U. of Minn., M.B., 1920	321 Nelson Ave., St. Paul
Lee, John Leonard	U. of Minn., M.B., 1920	Elbow Lake, Minn.
McCarty, James J.	Harvard, 1878	Hotel Andrews, Minneapolis
Martin, Benjamin James	U. of Minn., M.B., 1920	Miller Hospital, St. Paul
Merkert, Chas. E.	U. of Minn., M.B., 1920	2717 3rd Ave., Minneapolis
Nelson, Wilford Merriam	Harvard, 1919	Fergus Falls, Minn.
Regnier, Edward Alexis	U. of Minn., M.B., 1920	Univ. Hosp., Minneapolis
Rudie, Peter Severin	U. of Minn., M.B., 1920	Madelia, Minn.
Simons, Bernard Henry	U. of Minn., M.B., 1920	Chaska, Minn.
Vasenius, Frederick Walter	Geo. Wash. U., 1909	Chisholm, Minn.
Warnock, Ralph Wallace	U. of Minn., M.B., 1920	Gen. Hosp., Minneapolis

BY RECIPROCITY

Basinger, Harvey Raymond	Rush, M.D., 1916	2211 W. Boone Ave., Spokane, Wash.
Beery, Geno Ethel	Hahnemann, Chicago, M.D., 1920	2215 Western Ave., Minneapolis
Brown, Lyle Leland	U. of Ill., M.D., 1918	Crookston, Minn.
Devereaux, Thos. Jos	Rush, M.D., 1915	315 W. 15th St., Minneapolis
Fisher, Stephen	Milwaukee Med., M.D., 1903	New Salem, N. D.
Gaarde, Fred William	Rush, M.D., 1912	Rochester, Minn.
Guedel, Arthur Ernest	Indiana U., M.D., 1908	Athletic Club, Minneapolis
Perkins, James Robert	Marquette, M.D., 1910	Radisson Hotel, Minneapolis
Stevens, Jos. Bonsall	U. of Ill., M.D., 1920	Luverne, Minn.

NATIONAL BOARD CREDENTIALS

Brand, George Douglas	Northwestern, M.D., 1917	Lowry Building, St. Paul
White, Willard David	Rush, M.D., 1919	301 Phys. & Surg. Bldg., Minneapolis

PHYSICIANS LICENSED TO PRACTICE IN NORTH DAKOTA AT THE JANUARY (1921) EXAMINATION

BY EXAMINATION

Heimark, Julius, U. of Minn., 1920, Fargo, N. D.
Rigler, Leo G., U. of Minn., 1920.....
.....New England, N. D.

BY RECIPROCITY

Carr, A. M., Rush, 1915.....Minot, N. D.
Eaton, Richard G., Harvard, 1896.....
.....Jamestown, N. D.
Hartman, Eugene C., U. of Louisville, 1911
.....Bismarck, N. D.
Werlich, Richard E., Rush, 1915..Hebron, N. D.

INSTRUMENTS, BOOKS, AND FURNITURE FOR SALE

The instruments, books, reclining chair, couch, and desk and chair of the late Dr. F. J. Duggan, of Grand Forks, N. D., are offered for sale cheap. Address Mrs. F. J. Duggan, 321 No. Third St., Grand Forks, N. D.

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PHYSICIAN WANTED

There is a splendid opening for a physician in a small village near Minneapolis, in a very rich farming community, well settled, and containing a population entirely too large to be served by the physicians located in the larger distant towns. The physician now attempting to serve this population wants another man in the territory. A cordial welcome will be extended to a good man. Address 108, care of this office.

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One brand-new Universal ophthalmometer, with table for same and artificial cornea. Cost, $210.00. Will sell for $175.00 cash. This instrument has never been used. Address The Stoddard Drug Company, Stewartville, Minnesota.

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A brand new Spencer microscope complete; oil emersion, set of stains, slides, etc. Book on laboratory technic. Microscope has been used two or three times. Also an L. C. Smith typewriter. Will sell both for $170 cash. Will pack and guarantee delivery. Address 106, care of this office.

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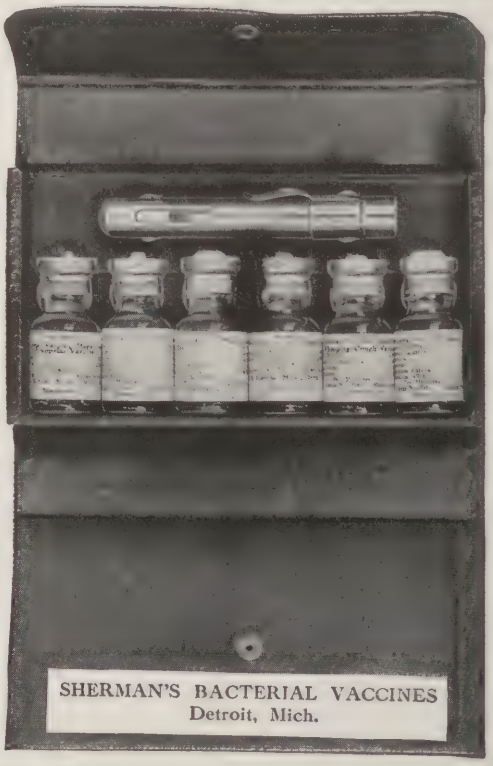
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A MILD WINTER—RESULTS

A mild winter with sudden turns to extreme cold brings with it a rapid and great increase in the number of respiratory troubles the physician has to treat, from the ordinary "cold" to the more deep-seated catarrhs, bronchitis, pleurisy, and pneumonia.

Of considerable interest is, therefore, the timely announcement, just made by Schering & Glatz, Inc., that they will in future supply, under the designations "Creosote Carbonate, S. & G." and "Guaiacol Carbonate, S. & G.," U. S. A. made products of the same high standard which distinguished the imported products "Creosotal" and "Duotal," of which they were the original and sole distributors for many years.

Both products are obtainable through the drug trade, or, if physicians are not promptly and satisfactorily served, direct from Schering & Glatz, Inc., 150 Maiden Lane, New York.

THE CAMPHO-PHENIQUE ANTISEPTICS

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This is a proper challenge for any manufacturer to make, and the company making it takes all the risk of failure, which to it would be serious, while success would be exremely gratifying to both patient and physician.

LISTERINE

Listerine is one of a few products in general use in the medical profession which did not make their way from the bottom to the top, but from the top to the bottom of the profession. In other words, Listerine appeals to the scientific surgeon or general practitioner, and its composition makes the appeal. No one claims that it possesses healing qualities; it simply creates or maintains healing-quality conditions in the operative or accidental wound and likewise prevents retardization of the natural healing process.

It is grateful to all mucous surfaces, and is used largely as a gargle, spray or douche. It is an ideal lotion.

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To enable two observers to view stereoscopic *x*-ray negatives, a novel arrangement providing adjustable mirrors in place of the fixed angle mirrors in the regular Wheatstone Stereoscope, is to be found in the Duplex Stereoscope made by the Wm. Meyer Co., whose advertisement appears on another page.

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Intravenous medication deserves far more attention from general practitioners than it receives, because too many men think such medication is attended by untoward results. It is just the reverse of this. Dr. Louis Stern, of New York, a very distinguished practitioner, contributed a paper on the subject (July 5, 1919) to the *New York Medical Record,* in which he says:

"The writer, as a result of his experience during the last three years with the intravenous method of drug administration, can declare absolutely that it has been demonstrated to be not only practical, but as nearly ideal as we can hope to secure. There is no question that in overcoming all difficulties of absorption by placing the remedy directly in the blood stream, we have reached the ideal method. I use the word "ideal" because within the limited field of my own experience, the results obtained fully warrant the term.

"I have had no experience with extemporaneous solutions. The remedies I have used were made by a New York laboratory, and regarding them I can say that the general practitioner can safely and practically use

them intravenously, either in his office or at the bedside."

The New York Intravenous Laboratory, 110 East Twenty-third Street, New York City, will be glad to send any physician interesting reports of intravenous medication.

X-RAY ACCESSORIES AND SUPPLIES

Messrs. F. L. and H. E. Pengelly, 220 La Salle Building, Minneapolis, publish in our issues of the fifteenth of the month, but not in the issues of the first, an interesting list of over seventy articles which they keep in stock for immediate shipment. It is sometimes difficult to get promptly *x*-ray accessories and supplies; therefore it is desirable to know just what can be had for immediate delivery.

Changes are made in this list from month to month, and thus the lists should be kept for reference.

They also offer information concerning many lines of *x*-ray appliances that is valuable.

THE NATIONAL PATHOLOGICAL LABORATORIES (INC.)

The diagnostic problems are the important problems in medicine, and many of them cannot be solved without the assistance of the modern laboratory. Only through the hearty co-operation of the clinician and the technician are these problems solved, together with the problem of treatment.

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One of the foremost of the laboratories is that name in the caption of this article, with laboratories in Chicago, St. Louis, Detroit, and New York, in each of which the same high class work is done.

The service of these laboratories can hardly be excelled, and correspondence with them is invited with all physicians.

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"The dropsy of the nephritides may be either slight or marked, local or general (anasarca) and sudden or slow in onset. It is purely renal in origin perhaps only in Acute Bright's Disease or in the earlier stages of Chronic Bright's Disease. In all forms of chronic nephritis the dropsy may be due in part to the venous stasis of cardiac incompetency."

And the Treatment? To increase cardiac force, overcome circulatory stasis, secure resorption of effused fluid, increase diuresis,

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exert these actions, safely, efficiently, without cumulative action, gastric or renal irritation, reliably and continuously. **ANASARCIN TABLETS** contain the cardiac stimulating and diuretic effects of active Squill principles, Scillitoxin and Scillipicridin combined with Oxydendron and Sambucus. Indicated also in Post-Scarlatinal Nephritis, Dropsy due to cardiac valvular lesions, Exophthalmic Goitre and Cardiac Neuroses.

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A more adequate and rapid immunity can be established with polyvalent vaccines than from an infection itself. Sherman's Polyvalent Vaccines rapidly stimulate the metabolism and defense of the body with a resultant prompt recovery in general acute infections.

Therapeutic interpretations must rest on clinical experience.

Any information or data on request by physicians will be complied with promptly. Address the Laboratories of G. H. Sherman, M. D., Detroit, Mich.

ANTIPHLOGISTINE

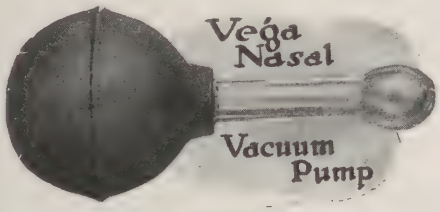
The claims made for Antiphlogistine are neither extravagant nor difficult to establish as truthful, for the action of this product is essentially that of the best poultice applied under ideal conditions by an experienced nurse, yet ideal conditions are almost unattainable. Antiphlogistine relieves congestion at a deep-seated point by stimulating circulation near, generally over, that point. The results of such stimulation of the superficial circulation are known to all, and need no exaggeration, if such were possible, to commend the agent that produces it.

Antiphlogistine has not come into well-nigh universal use by medical men through any imaginary qualities claimed for it. On the contrary, a fair trial of it commends it beyond any exaggerated claim that might be set up for it; therefore no exaggerated claim is necessary, and none is made.

THE IMPORTANCE OF NUTRITIVE REPAIR

In the treatment of all bodily disorders, associated with loss of weight and general vitality, the value of nutritive repair is too patent to need more than passing emphasis. The question of how best to bring about such a desirable result is, however, one that the physician is daily called upon to answer, and upon his ability to "build up" his more or less devitalized patients will largely depend his success in the treatment of chronic affections. Taking, for example, a patient suffering from pulmonary tuberculosis in the incipient or secondary stage, what are the approved measures to adopt to bring about improvement of nutrition and a consequent gain of weight and strength? All phthisiotherapists now agree that the therapeutic trinity of salvation for the tuberculous invalid is composed of: 1—Fresh, pure air, in abundance, both night and day; 2—A properly balanced ample supply of nutritious food; 3—Plenty of rest, especially during the febrile period.

While medication is useless, unless the patient is properly fed, "ventilated" and rested, as above referred to, there is no doubt that intelligent medical treatment,



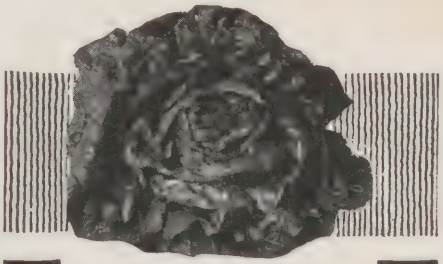
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designed to promote nutrition, is indicated in a majority of cases. If the tuberculous patient has been neglected, for any length of time, some degree of anemia is almost always present. In such cases, an absolutely bland, non-irritant, readily tolerable and assimilable form of iron, such as exists in Pepto-Mangan (Gude), cannot be but of benefit, by stimulating the formation of erythrocytes and hemoglobin, and thus augmenting the oxygen-bearing potency of the blood. Metabolic interchange is thus quickened, better absorption and assimilation of food follows, and as a consequence, nutritive repair is encouraged and hastened.

THE MINNESOTA SANITARIUM

The cottage or home-like sanitarium is an institution not soon to be supplanted, especially for nervous and mild mental cases. It generally occupies a handsome residence in a quarter of the city partially deserted by its wealthy builders, who see a more fashionable street, but it retains the home surroundings, and it reduces the overhead expense and makes possible prices within the reach of all.

Such is the Minnesota Sanitarium of Minneapolis, conducted by two men of high professional standing, Dr. Leo M. Crafts and Dr. Julius Johnson, with a competent superintendent, Miss Nanna Estelle.

This sanitarium also takes alcoholic and drug addict cases.

MUDCURA SANITARIUM

The Mudcura Sanitarium, at Shakopee, Minn., an hour's ride from the Twin Cities, is an ethically conducted institution for the treatment of a group of diseases that seem to baffle all kinds of medication and yet yield almost marvelously to the mud bath and kindred treatment. The list of such diseases is known to every physician, and while the list is a short one the number of cases is very large indeed.

Dr. H. P. Fischer is the Medical Director, and Dr. G. P. Dempsey is the Home Physician of the sanitarium.

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An out-of-door life with sunshine, proper exercise, and expert medical supervision, will cure the early manifestations of tuberculosis in almost one hundred per cent of the cases; but such treatment cannot be obtained outside of a modern sanatorium, and for many patients a mild climate is imperatively demanded, especially in the winter.

Arizona furnishes an almost ideal climate for several months in the year, and the institution named at the head of this notice furnishes the other conditions, not alone for the incipient case, but for the well-advanced case; and this institution is in the hands of men of national reputation in their line of work.

The announcement of the Tucson-Arizona Sanatorium contains some interesting facts, easily verified and very important to the doctor with a patient in need of the conditions that exist there.

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Every hard-working and tired-out mother should always have Horlick's Malted Milk on hand, and drink it freely when tired out, or, better, to prevent becoming exhausted.

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X-RAY DIAGNOSIS OF THE PATHOLOGICAL THORAX*

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SIOUX FALLS, SOUTH DAKOTA

X-ray diagnosis in diseases of the thorax has approached, within the last few years, scientific accuracy. This has been brought about chiefly through the perfecting of modern apparatus that facilitates simplicity of manipulation and precision in operative technic.

When one considers the fact that the *x*-ray was discovered only twenty-five years ago, and that only a few years back it was considered a curiosity, used only to perform some simple experiment, such as seeing a key enclosed in a book, he marvels at the present-day knowledge of this rather new scientific discovery.

You are all more or less familiar with some of the beneficent and practical uses of this agent in the diagnosis and treatment of human ills, and should also remain alert to its increasing possibilities, in the practice of your profession.

The so-called *x*-ray pictures, or plates, as you know, are simply shadowgraphs, the same varying in contact according to the density of the parts penetrated by the ray.

Accurate interpretation of shadowgraphs necessitates a knowledge of anatomy, histology, and pathology; and, as pathological processes produce lesions of varying densities, differing from the normal, the significance of this visualization is at once apparent.

It is a good rule to make routine observation in all diagnostic examinations; and in the chest one should first note any physical abnormality which the patient may present to inspection, to better anticipate the *x*-ray study. A few notes as to the clinical history is also well to obtain at this time.

The patient is then submitted to a fluoroscopic examination, and, since the thorax is occupied principally by the lungs, the *x*-ray study is here very satisfactory, as air is the best medium for contrast observation in the body.

The apices are first studied and compared as to the light reflex; and we next note the diaphragmatic excursions, the level of the right and left dome, and the presence or obliteration of the costodiaphragmatic angles.

The dome of the right diaphragm is normally one interspace higher than the left, but may be pushed up higher, with a liver or subphrenic abscess. In pleurisy we observe limited excursions of the diaphragm, the outline of which may be indistinct, except on the left side, where gas in the stomach gives contrast from below.

In emphysema there is also very limited diaphragmatic excursion, while in poliomyelitis there may be complete paralysis of the same.

The hilus shadows or roots of the lungs are composite in nature, and represent the existing arteries, veins, lymphatics, lymph-nodes, bronchi, nerves, and connective tissue. They resemble the wings of a butterfly, the right one being the more discernible, as the heart shadow does not here intervene.

Next in order we study for any abnormal findings, the mediastinum, which contains the heart,

*Presented at the thirty-eighth annual meeting of the South Dakota State Medical Association, at Watertown, May 21 and 22, 1920.

aorta, trachea, esophagus, and surrounding glands. Lastly, the patient is stereoplated for further study, and, in making final interpretation of the same, one should always take into consideration the clinical picture or history of the patient, as only then can a comprehensive *x*-ray diagnosis be made.

DISEASES OF THE PLEURÆ

When this membrane becomes diseased, it manifests itself by increased density on the plate and by adherence to the thorax, the latter being revealed by fluoroscopy and manifested by the fact that the diaphragmatic excursion is less than normal, or even nil, on the affected side.

Pleurisy with effusion shows up with increased density in the lower angle of the pleural cavity, except where encysted, when the cyst may be interlobar or in the lateral chest.

Fluid in the chest or pleural cavity under normal pneumostatic conditions, shows an ill-defined upper border, which is directed downwards and medially from the outer aspect of the chest. This is due to the fact that the lung is fixed at the hilum, and no resistance is present at the outer aspect or lateral chest wall; therefore, the fluid seeks the path of least resistance and reaches its highest level at such point.

When air, purposely or otherwise, is introduced into the pleural cavity, the negative air-pressure is converted into a positive one, which, in the presence of fluid, establishes a liquid level, the same changing with the position of the patient.

In large accumulations of pleural fluid, we also note a displacement of the heart, the same being pushed to the healthy side.

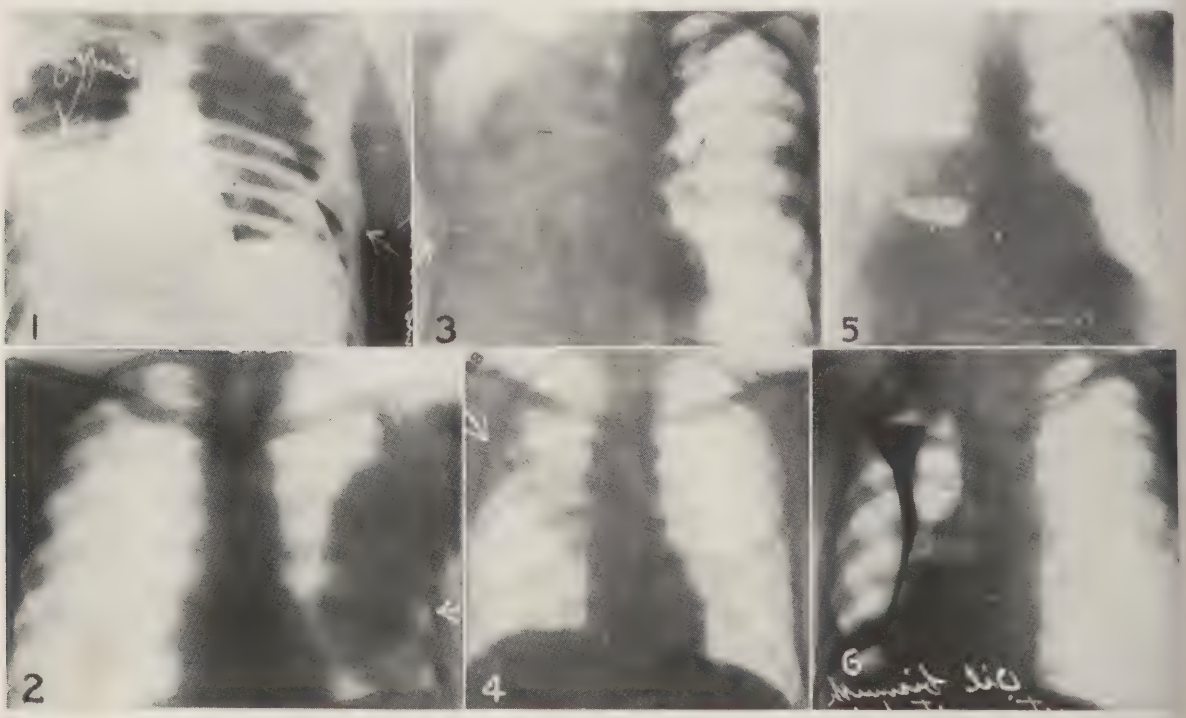


Fig. 1. Empyema of the left pleural cavity, also showing a pneumothorax in the right chest, the same following aspiration. Also note cardiac dilatation.
Fig. 2. The left chest shows encysted fluid.
Fig. 3. Marked pleural effusion filling the entire right chest.
Fig. 4. Interlobar pleurisy in the upper right chest.
Fig. 5. Pyopneumothorax in the right chest. This was a four months' post-pneumonic case.
Fig. 6. Oil bismuth injection of the left chest, studying a gradual lung expansion in pneumothorax.

DISEASES OF THE BRONCHI

Acute bronchitis cannot be demonstrated on the screen or plate, while chronic bronchitis manifests itself by increased density along the course of the bronchial markings, and is usually spoken of as peribronchial thickening. This condition was very easily demonstrated in cases of post-mustard gas inhalations, as well as of post-influenzal infection, which were so frequently seen in the late army service.

Foreign bodies when located in the bronchi, particularly if of metallic composition, are very

readily demonstrated, whereas non-metallic bodies are sometimes invisible.

TRACHEOBRONCHIAL ADENOPATHY

Whether the disease is of the mediastinal or pulmonary hilum group is easily demonstrated when present. The former is frequently seen in children following measles, whooping cough, and other infectious diseases of childhood, and usually means a gland-infection without lung involvement. In adults these glands may become round tumor masses, as is classically illustrated in Hodgkin's disease, when of the mediastinal type.

Tuberculosis sometimes manifests itself by infiltration of these glands, but when present usually shows evidence of calcified areas in the mass, with no displacement of the trachea or esophagus, so frequently seen in mediastinal tumors.

DISEASES OF THE LUNGS

Pulmonary congestions as seen in influenza, in cardiac diseases and in patients in prolonged dorsal decubitus, are frequently demonstrated as diffuse shadows throughout the lung areas. Pulmonary infarcts are sometimes noted as diffuse shadows, but, as a rule, these are indistinct in outline. Lobar pneumonia can be demonstrated as a triangular dense shadow with its base towards the periphery of the chest, and the apex directed toward the hilum this area corresponding to a lung lobe. This shadow, especially in children, can frequently be demonstrated a few days before the disease can be outlined by auscultation or percussion. This observation in facilitating diagnosis and giving the location of the consolidated area is enlightening at times, as well as efficient in determining the unresolved complications which sometimes develop and exist.

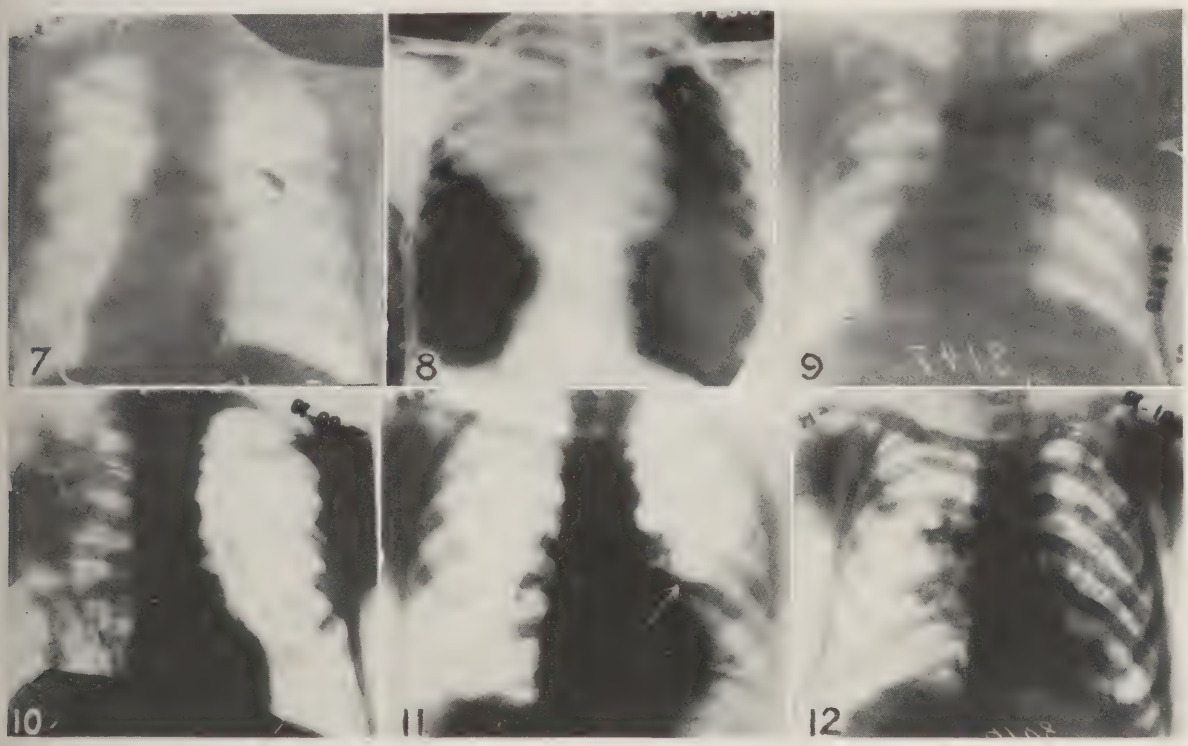


Fig. 7. Machine-gun bullet in center of the right lung. Note the clean cut outline of the bullet without any evidence of surrounding lung pathology.
Fig. 8. Late Hodgkin's disease of the mediastinal type, showing very large tumor present.
Fig. 9. Lobar pneumonia involving the right central lobe.
Fig. 10. Unresolved pneumonia in the right middle lobe.
Fig. 11. Pulmonary abscess in the left lung. Note the fluid level as indicated.
Fig. 12. Pulmonary tuberculosis in both chests in advanced stage.

LUNG ABSCESS

Lung abscess, although rare and clinically difficult to determine, is usually readily diagnosed on good stereoplates.

EMPHYSEMA

Emphysema manifests itself by marked clearness of lung fields which do not change with respiration under fluoroscopic examination. The

diaphragm also becomes flattened, and shows subnormal excursions.

PULMONARY TUBERCULOSIS

This is a condition which, in the incipient stage, has been, and is still, a frequent pitfall for enthusiastic *x*-ray diagnosticians. However, I believe that the leading thought today credits this means of diagnosis with a high percentage of accuracy, if the proper observation and technic are employed. These patients should always have the benefit of both fluoroscopic and radiographic examinations. The former should ascertain the amount of apical illumination, with notation of any dissimilarity that may be present. Next the diaphragmatic excursions should be checked up, as to extent and similarity, with the assumption in mind that a poorly illuminated apex associated with a lame diaphragm on the same side, rules favorably for tuberculosis. Following this stereographic plates should be taken, and in their interpretation I shall take the liberty to quote Dunham, who has probably made more extensive studies and observation than anyone else in making an *x*-ray diagnosis of pulmonary tuberculosis.

The characteristic tuberculous plate-marking consists of a fan-shaped density with the base of the triangle toward and near the pleura, the apex toward the hilum, and connected to the hilum with a heavy trunk. If we have two or more such areas with varying densities, we have a picture pathognomonic of tuberculosis, since tuberculosis is a disease of successive infections. The greatest density indicates the oldest lesion. The pathological lesion within the lung which causes this fan-shaped density on the plate, is a cone with its base to the pleura and its apex toward the hilum. The density within the fan-like area varies greatly. The radiating linear markings may either be interwoven, broadened, studded, obscured by the filmy cloud effect, mottled, matted together, or blotted out. Striking characteristics of the tuberculosis picture are the varying-degree change in the different trunk groups, in contrast to the general homogeneous change in diseases, which might simulate tuberculosis, and the lack of continuity with which the trunks may be involved. Thus we may have only the vertebral and second interspace trunks of an upper lobe involved, leaving the first interspace trunk clear. Further, it is very striking to note the constancy with which early or slight lesions in the adult are limited to the trunk of the upper lobes.

If the fine linear markings of a given trunk are fuzzy or are faintly obscured by a cloudy effect, and the fan appears to be wide open, active tuberculosis is suggested. On the other hand, if the linear markings in a limited area are sharply defined and dense, and show clean-cut studdings beyond the trunks, and the fan is partially closed, a healed lesion is suggested. This condition is emphasized if it is accompanied with heavy coarse interweavings which reach to or near the periphery. The heavy trunks between such areas and the hilum are usually broad and dense.

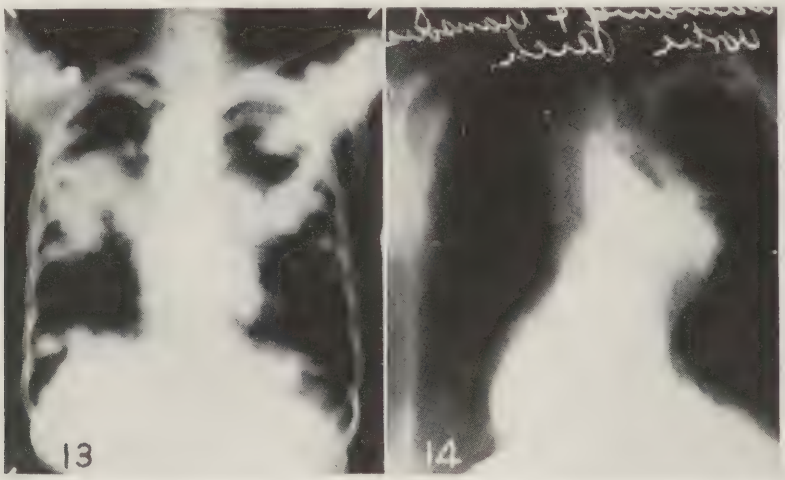


Fig. 13. Metastatic sarcoma in both lungs, following a primary lesion in the left testicle.
Fig. 14. Large aneurism of the ascending and transverse aortic arch.

PULMONARY MALIGNANCY

Pulmonary malignancy has taken on enthusiastic impetus from an *x*-ray standpoint, possibly due to a recognized apprehension of secondary or metastatic growth in the lungs. It is considered a good rule to radiograph the pulmonary fields in all cases of sarcoma and carcinoma before any radical operative procedures are advised, as the presence of pulmonary metastasis precludes eventual surgical recovery.

DISEASES OF THE HEART AND GREAT VESSELS

These conditions are characterized by enlargement and deformity of outline, the same to com-

ply with the associated lesion. Roughly speaking, we find an enlarged spherical heart with mitral disease and an elongated heart with aortic disease. In pericardial effusion the heart-shadow is enlarged and assumes the appearance of a water-bottle.

Individuals with the so-called tubercular diathesis many times show the small drop-heart, which is associated with a general visceroptosis.

Cardiac skiagraphs taken at seventy-two inches are accepted for practical purposes as actual-sized organs, from which the various measurements are taken, such as the right-median, left-median, and longitudinal diameters. Thus it will be seen that the actual size of a pathological heart can be ascertained with ease and accuracy.

Aneurysm of the various portions of the aorta, is evidenced by enlargement of the normal shadow, with a distinctive pulsation present.

In conclusion, I wish to state that my attempt in this brief résumé of *x*-ray diagnosis of chest lesions, is to indicate the more important facts, as the röntgenologist sees them from day to day, that, while some of the findings are conclusive as to diagnosis, others are but corroborative, and that the clinical study and acumen as exercised by trained medical minds of today, with the aid of the *x*-ray, as well as other laboratory means, are decidedly necessary to reach the acme of perfection in the diagnosis of human ills.

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DISCUSSION

Dr. A. C. Stokes (Omaha, Neb.): The doctor has given us an excellent paper on the lung question. There are two or three points, however, I would like to have the doctor enlighten us on that have bothered me in arriving at certain decisions which I have to make every day. The first one is the effect, if any, of influenza on the lung, and what are the *x*-ray findings, if he has any, of post-influenzal infection of the lung.

I heard a paper not long ago during the reading of which the author showed a lot of post-influenzal lesions, and, personally, I could not determine whether or not the same condition would not have applied to the same number of fairly normal lungs that were shown on the screen.

A second point I would like to call attention to is, How can we differentiate by the *x*-ray between syphilis of the lung and tuberculosis? I think perhaps syphilis shows a fan-shaped lesion more prominently than tuberculosis, particularly syphilis of the lung situated lower down, starting at the hilus pulmonis and extending beyond that point, and tuberculosis beginning higher up and extending from that point.

Dr. B. A. Bobb (Mitchell): I was about to ask the same question that Dr. Stokes has asked relative to post-influenzal infection of the lung. Our röntgenologist says that syphilis of the lung looks very much like tuberculosis of the lung. In one of our cases the patient had been going down hill ever since 1918. He had a little rise of temperature, and showed these areas all through one or the other lung. It was difficult for us to tell what it was. A sputum examination was made, and we thought there were numerous post-influenzal small abscesses.

Dr. Nessa (closing): In answer to Dr. Stokes' question, I will say that my observation and experience will show that these post-influenzal cases have what is commonly known and called a *peribronchial thickening*, which is nothing more or less than a general accentuation of the pulmonic markings throughout, that the tree-like branches which we note on *x*-ray plates represent a bronchus with its associated artery, vein, nerves, lymphatics, and connective tissue. Therefore you can readily understand how an infection like influenza can produce an increase in these lines or markings; and I find that these cases which come up for examination from one to two years following the influenza still show a rather distinct accentuation of these markings. The hilum glands may also be increased in density, and show a rather dense lung-root, but remember the fact that tuberculosis in the adult nearly always produces its lesion in the upper lobes and toward the periphery, manifesting itself in the so-called fan-shaped areas, which were described in my paper. I do not think there is much difficulty in differentiating a post-influenzal infection from tuberculosis in the lung.

In answer to the second question, how to differentiate between syphilis and tuberculosis of the lung, I realize that at times it may be more or less difficult. The fan-shaped lesion which Dr. Stokes mentioned as occurring in syphilis, as I understand it, is a round fan with radiations from a central point, which is located in the neighborhood of the hilum of the lung and has no trunk connection with the pulmonary hilum, as is found in the Dunham fan of tuberculosis. The tuberculosis areas, which I have called fan-shaped bodies, as you remember I have already stated, were located in the upper lobes and usually near the lateral chest walls, and that they are cone-shaped with the base toward the periphery and the apex toward the hilum of the lung connected by a heavy trunk; that they usually are multiple and show varying degrees of density, and it is my impression from these fan-shaped bodies which I have had occasion to observe that the one that is found in syphilis is greatly more dense than the one found in tuberculosis, as well as being circular, and located lower in the lung.

THE WESTERN SURGICAL ASSOCIATION: PRESIDENT'S ADDRESS*

ARTHUR T. MANN, M. D., F. A. C. S.
MINNEAPOLIS, MINNESOTA

Mr. Toastmaster, Members of the Association, and Guests:

I have taken as my subject tonight "The Western Surgical Association."

The Western Surgical Association! What a sturdy child it is that was launched in this land of the West, where the young men came to take possession and where, with energy, with foresight, and with brains, they have labored for the good things of the earth—for broad lands and a competence, yes; but for self-expression, for the development of the best that is in them, with high ideals, with enthusiasm untrammeled, and with a vision. Is there any wonder, when our Association has drawn its members from such men as these, some of whom have grown to middle age, increasing in their powers, wiser with their years, still pointing the way to better things —is there any wonder that our Western Surgical Association takes the high place we give it? In our hearts it is second to none; it is the best. We cherish it because man loves that best which he can best serve. In this association, with its limited membership, each member can make himself felt to the limit of the circle.

There is a community of interest, a community of purpose, and a good fellowship seldom found in a society spread over so wide a territory. And there is good reason for this. Each candidate should be proud of his election to membership, because he has been scrutinized with unusual care. He has been chosen as one who, while he is well trained and well equipped, cherishes the high ideals of our profession, one who has some enthusiasm and who gives promise of developing a certain amount of power; one who, in addition to his professional qualifications, shows an element of right-mindedness, of good-will, which may endear him to his fellows.

I have always thought of our limited membership as a source of strength. It enables one to choose wisely, because the places to fill are few. The promising men are chosen rather than the inefficient merely because they bring to bear personal pressure and the claims of friendship. It is curious how some qualities which often attract us are enhanced when supplemented by other qualities of mind and character,—the qualities we look for in our members. This limitation in numbers leads us to select for the future rather than for the present—leads us to select the men with native powers and force of personality, men who will wear well, who will be an inspiration to us, men who may become personal friends and wear well in the years to come.

It has been my privilege as secretary, and now as president, to have served the Association for fifteen years. They have been years of pleasure and years of profit. I have given the best that is in me, and I have been repaid many fold for every effort I have put forth. It has been my endeavor to help make the work of the Association run smoothly, to correlate it so that it might be effective. The task in the main has been an easy one. When one looks about and sees the wealth of material we have in the men who are here present, and remembers those who have not been able to come this great distance, but who are almost always with us, one must realize that the strength of the Association lies in its members, active, virile, always offering the best fruits of their experience.

Our programs have been full and running over. It has been difficult, often, to eliminate from the wealth of material offered, so that they might not be overburdened, but might be compact, co-ordinate, effective. There has been the purpose, also, to make the influence felt from year to year, to make the work progressive, to inspire others with the desire to work further into conclusions which will be lasting, and so to add to our knowledge in subsequent years. And this has often come about. Those of you who are within the sound of my voice will know how you have been stirred, time and again, by what you have heard from the various members of this organization. Sometimes it has been the gathering together of a rich experience; sometimes it has been the presentation of original work; sometimes it has been the result of a broad grasp of a subject which has been treated with high reasoning and a clear insight so that it has crystallized the work and the thought of a decade, and given us a new foundation to stand upon as we build toward the future.

A paper of original work has led to further original research, sometimes by those who heard it, sometimes by the man himself, who feels the sympathy of his audience and their attitude of

*Presented at the annual meeting of the Western Surgical Association, held at Los Angeles, California, December 3 and 4, 1920.

encouragement. The thoughtful presentation of personal experiences has touched a responsive memory in others, has stimulated their imagination until they realize the underlying reason and meaning of the experiences they themselves have had. They become better men, and go back to their work with more enthusiasm, determined to do it better, and in the coming years they bring the results back to us.

Fine as have been our papers in the main, it has often seemed to me that the discussions which they have called forth have sometimes excelled them in inspiration. Untrammeled as they are by the necessities of a paper which force its development along broad lines and make necessary, for completeness of development, the inclusion of much material that is of secondary interest and much of which is already well known, the discussions run with a freedom from restraint. They are more human, more personal, than the formal papers. They amplify and enrich the development of the theme. When a man reads a paper into which he has put hard work and clear thinking, bringing him slowly to conclusions of real value, how often he is charmed by the quick touch and go of the discussion! A pointed experience, a close analysis, a clear word picture, and the truth is touched into life for our use. The readiness of our members to enter into the discussions shows a versatility, a richness of thought and experience, which is an index of the high quality of our Association. And the spirit manifested in the discussions is always admirable. Commendation is freely bestowed where commendation is due, and the wind is tempered to the shorn lamb, and, though he feels the wind, he feels it as a gentle breeze. Things that are not sound cannot stand before such a body of men. Charitable they are, yet firm; kindly, yet unwilling to see the truth obscured.

If a member presents a new type of operation, or ingenious instruments to save time and make results more sure, the discussion welcomes him. If he becomes a biologist and traces an abnormality through different orders of the vertebrates, and sometimes well into the invertebrates where it occurs normally, to catch the law of nature which controls, and to make use of it for greater perfection, the discussion warms to him. If he becomes a physiologist and seeks the underlying vital forces and endeavors to harness them for his uses and to gain better results than he could be served by mechanical means alone, the discussion makes him feel at once the quick sympathy and ready appreciation of a body of men before whom it is an honor to present his thesis.

We learn to know the men better in the discussions than in the formal papers; their personality is more magnetic, more forceful. It is always in evidence. It underlies all they say and gives it special meaning. Here, in the spontaneous freedom of their expression, we best gauge their value, the breadth of their conceptions, the richness of their minds.

Our Association has come through many years of profit to its members. They have been years in which its members have grown in strength and wisdom, and the results have been reflected in our Association. As individuals they have been active in working for the best interests of surgery and have brought back to us, year after year, the fruits of their labors. They have been doing better surgery; they have been striving to do surgery in a better way. They have been urging a better diagnosis, a more complete study of a case by all the facilities which can be brought to bear,—a careful, thoroughgoing history; all the information well-organized laboratories can give, and the associated studies of specialists in other fields of medicine. Years ago, A. F. Jones, of Omaha, made a strong plea for well-equipped laboratories, well run and properly manned. Malcolm L. Harris, of Chicago, made a most searching study into the sifting of "Testimony and Evidence in Medicine," and its relative value in arriving at a correct diagnosis. Horace G. Witherill, of Denver, made a plea for "Hospital Standardization" and efficiency. The interest it aroused and the discussion it brought forth had a strong influence in furthering this great advance, which is in the active stage of accomplishment and is now fathered by the American College of Surgeons. Jackson, Grant, Moore, and others urged earnestly the standardization of the surgeon, the elimination of the incompetent, the proper training of those who give promise. And Jackson added: "The incompetent should not be branded with an assumed brand of competency. On the other hand, we believe that the time has also come when the man who has honestly trained himself to be a competent and trustworthy surgeon is entitled to some distinction which will speak such training."

To remind you in another way of some of the work of this Association it is necessary merely to mention by title some of the papers which have been read before us. As I give them many of you will remember something about them—something about the subject matter, something about the personality of the men as they read them, or

something about the character of the discussions, all of which went to make them worth while. I shall not go back of the Kansas City meeting, at which I was chosen as your secretary, and I shall select them more or less at random.

In 1905 we had "Cancer of the Breast," by Beverly MacMonagle, in which he advocated that every tumor of the breast should be removed early in its history, should have a careful microscopic examination, and that every case in which there was shown the least question of malignancy should then be subjected to the radical operation and given the best chance for a permanent cure. This was certainly advanced ground to take fifteen years ago. It is an advanced but sound position to advocate today. In the same year Jabez N. Jackson gave "A New Technic for Breast Amputations," an excellent method now used by many of our best surgeons. "An Experimental Study into the Etiology (or cause) of Cancer," by Arthur E. Hertzler, was given in 1907, in which he based his experiments on the action of certain stains, notably Sudan III; and in his paper he assumed "that the balance between epithelium and connective tissue is a chemical one, and that, when such balance is disturbed, the development of one tissue at the expense of the other is possible."

"The Cancer Question," by John E. Summers, in 1908, and the discussion it brought forth, might stand almost word for word today.

"Cancer of the Hollow Viscera of the Abdomen, with Special Reference to Diagnosis," by Miles F. Porter, and "Observations on the Present Status of Surgery for Cancer of the Breast," by E. S. Judd, followed in 1911. "The Results of Treatment of Cancer of the Uterus by the Actual Cautery," by James F. Percy, in the same year, opened up a subject which has led to much discussion and the smoke is just now clearing away.

The timely and clear paper on "Bleeding Nipples," by Dean Lewis, in 1915, helped to elucidate a vexing problem.

W. W. Grant, in the same year, gave one of the best operations for cancer of the lip, one which he has been doing for many years.

And Wm. M. Harsha added to our knowledge when he brought before us, in 1917, the subject of "Carcinomatous Mastitis."

The "Symposium on the Gall-Bladder," by Harris, Bartlett, Davis, Haines, and others, in 1907; the paper, in 1910, by John E. Summers on "Typhoidal Cholecystitis"; the alluring suggestion of the "Therapeutic Use of the Bile Tracts," by L. L. McArthur in 1911; "End-Results in Gall-Bladder Surgery," in the same year; the question, "How Much Disease a Gall-Bladder May Have and Still Serve Its Purpose," in 1912, by B. B. Davis; "Cholecystitis and the Factors that Control Results of Operation," by C. H. Mayo, 1913; "Suture of the Bile Ducts," in 1915, by T. F. Riggs; "The Fate of the Cystic Duct After Removal of the Gall-Blader," by D. N. Eisendrath, in 1917; and the interesting and profitable discussions which these papers called forth from the best minds among us, have brought us abreast with the present, and new experiences will have to be lived through before we shall depart from our present surgical procedures in relation to the gall-bladder and the bile ducts.

Another field of interesting study has been the membranes and kinks and faults of the bowel. In 1908, "Jackson's Membrane," by Jabez N. Jackson, establised a new entity in surgical diseases. "Some Anomalies of the Sigmoid," by L. L. McArthur, in 1909, and "Intestinal Obstruction Due to Kinks and Adhesions," by C. H. Mayo, in 1910, together with the papers, "Etiology of the Lane Kink, Jackson Membrane and Cecum Mobile," by F. Gregory Connell, and the "Fetal Peritoneal Folds of Jonnesco, Treves and Reid, and Their Probable Relationship to Jackson's Membrane and Lane's Kink," by J. Rilus Eastman, in 1912, placed this field of surgery fairly before us. The symposium in the following year comprising the three papers, "The Significance of the Jackson Veil," by D. N. Eisendrath; "Pericolic Membranes," by J. Rilus Eastman; and "The Significance of Intra-abdominal Bands, Folds, and Veils," by William Seaman Bainbridge, taken together with the discussion which followed, was brilliant and masterly. It has seldom been surpassed.

The programs which have been presented before this Association have been so filled with good material that it is difficult to select what shall be spoken of, for it is certain that there will be other things of equal merit and in almost equal numbers that cannot be given for lack of time.

The experimental work on surgical shock was of great interest. This was given in the papers, "Further Experimental Data on the Vasomotor Relations of Shock," in 1909, by Major G. Seelig; "An Experimental Study of Sodium Bicarbonate and Other Allied Salts in Shock," in 1912; and "On the Condition of the Vasoconstrictor Centre During the Development of

Shock," in 1915, by the same investigator, as well as the papers of J. Frank Corbett, "The Adrenal in Relation to Shock," in 1914, and "Treatment of Shock with Epinephrin and Blood-transfusion," in 1915. The discussions by the men I shall name added materially to the value of the papers: Arthur E. Hertzler, Robert C. Coffey, Malcolm L. Harris, W. W. Grant, Martin H. Fischer, and Joseph C. Bloodgood.

The general subjects pertaining to the surgery of the abdomen were treated in the usual high order expected from the members of this Association. Robert C. Coffee, in 1906, gave the subject, "Principles of Abdominal Drainage," with miles of charts and years of work, and with an enthusiasm which the passing of time only served to strengthen. "The Significance of Tenderness in Locating Lesions of the Viscera," by T. C. Witherspoon, in 1907, was a scholarly paper.

"Transgastric Jejunal Feeding After Gastroenterostomy, Combined with Gastrostomy," by Arnold Schwyzer, in 1909, gave a new turn in a difficult field. "Diffuse Septic Peritonitis," by B. B. Davis, and "The Present Status of the Treatment," by A. E. Hertzler, in the same year, were followed by Jabez N. Jackson, with "The Retrocecal Appendix," in 1912; by J. E. Moore and J. F. Corbett with "Studies on the Function of the Peritoneum"; by T. C. Witherspoon with "Surgical Handling of the Pus-infected Peritoneum"; by Roland Hill with "Congenital Pyloric Stenosis," and by Charles D. Lockwood with "Ulcer of the Stomach Before the Age of Puberty," in the following year. "Excessive Mortality of High Intestinal Obstruction," by W. W. Grant, in 1914, was followed in 1915 by Amos W. Abbott with "Early Diagnosis of Intussusception in Children," which was classic. A. E. Hertzler, in 1916, gave his studies in "The Nature and Genesis of Peritoneal Adhesions," and H. M. Richter presented his paper on "The Perforated Gastroduodenal Ulcer."

Inadequate as is even this long list of papers to suggest more than a small part of the work which has been presented before us, I do not wish to weary you. One would need to analyze the work done in each successive year to do it justice. Practically every member of our organization has contributed to its efficiency and to its success. However, before leaving this phase of my subject, I wish to remind you of the excellent work of Leonard Freeman in "Tuberculosis of the Kidney"; of Emil Beck with "Bismuth Injections in Old Long-standing Tuberculous Sinuses," and with "The Skin-sliding Flap to Cure Large Empyema Cavities"; of J. Rilus Eastman and Harry P. Ritchie in the "Closure of the Cleft-Palate"; of Mayo, Hertzler, McLean, Judd, and others on the goiter question; of Collins, Nicholson, and Harris in the studies of anesthesia; and of Fairchild in an excellent study of "Massage of the Heart in Apparent Death from Anesthesia."

It has not been possible to enter into a broad analysis of the various features which have made our papers strong. To point out the rich material with which they individually abound or to show the wide fields which they have covered; to indicate the high qualities of mind with which they have been conceived or the force of personality with which they have been delivered, would carry me far beyond the limits of my time.

And now I wish to express our appreciation of the fine spirit of hospitality which the men of these two beautiful cities (Los Angeles and Pasadena) have shown in planning for our pleasure and entertainment at this meeting. Our Association is an earnest, active body of men, so immersed, as a rule, in the scientific proceedings that we often miss the experiences which give us an understanding of the warm feeling and generous character of our welcome. On the occasion of our visit here, however, we have been filled with anticipations of unusual pleasure and we have been made to feel that we have come to a place so beautiful and with a sojourn so well prepared for us that they will be more than fulfilled.

It was a long journey for most of us to take, but the members who invited us to come have been so faithful in their attendance, have come to us so many times, and have shown such lasting interest in so many ways, that we gladly accepted their invitation.

It was fitting that the Association, conceived in the West, should come to this land which shows at its best the beauty, the energy, and the warm hospitality which is characteristic of the West.

THE PREVENTION OF DIPHTHERIA

By Joseph H. Doupe, M. D.
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Diphtheria can be made as rare as smallpox. Four years of accurate investigation has demonstrated the truth of such an assertion. However, the information has spread slowly, and in many quarters the diphtheria toxin-antitoxin mixture is unknown or its use not understood. Therefore, diphtheria is still a widespread disease and the deaths from it are unnecessary sacrifices to ignorance. The mortality from diphtheria is high. In Chicago during 1915 there were 678 reported deaths from this disease, almost three times as many as from measles and nine times as many deaths from diphtheria as from measles. A mortality census from the registration area in the United States showed there were almost twice as many deaths from diphtheria as from scarlet fever. The 1919 mortality census from the registration area in the United States showed there were almost twice as many deaths from diphtheria as from measles or scarlet fever.[2] So, in spite of the availability of the specific antitoxin, numbers die from a disease which can be erased from medical consideration.

There are many causes of high mortality. The two chief causes are delayed and insufficient treatment. Rachford[3] states that less than 5 per cent die if antitoxin is given the first twenty-four hours, less than 10 per cent in the second twenty-four hours, 20 per cent in the third, and 40 per cent in the fourth. The delay frequently depends on the insidiousness of the onset, particularly in the laryngeal and nasal types. A purulent nasal discharge may be mistaken for an ordinary pus infection in the nasal sinuses, and hoarseness may be ascribed to non-membranous croup. Too often small doses of antitoxin are used, which do not retard the progress of a virulent infection. The truth of the statement is very apparent that fewer deaths would result if antitoxin were made available in lots not less than 10,000 units each. Such a quantity is no more harmful than 1,000 units.

Another very important factor in mortality is age. The younger the child the greater the incidence of diphtheria, which will be explained later, and the greater the mortality. Rachford, for instance, estimates that during the first year the mortality is 50 per cent, during the second year 30 per cent, and after the seventh year 7 or 8 per cent. The importance of the early period of life is further illustrated by Zingher's[2] figures taken from the New York City Reports. From 1900 to 1917, 77.5 per cent of deaths from diphtheria occurred in children under five years. In the period from 1891 to 1900, when one might say diphtheria antitoxin was being introduced, the figures were 81.5 per cent of the deaths were under five years. In other words, increased familiarity with and recognition of the value of antitoxin did not materially diminish the greater danger of diphtheria in the first few years of life. It is readily seen that any procedure which will reduce or obliterate diphtheria in the first few years will solve the problem of diphtheria prevention.

Four great advances have been made in the knowledge of diphtheria:

First, there was the discovery of the causative organism by Klebs in 1883, confirmed by Loeffler in 1884, and definitely established by Roux and Yersin in 1888.

The second step was the preparation by von Behring, Kossel, and others in 1892 of an antitoxic serum against the powerful exotoxin produced by the diphtheria bacillus.

Third, Schick,[4] in 1913, devised a method of determining the immunity or susceptibility to diphtheria by the intracutaneous injection of a minute amount of diphtheria toxin.

Fourth, a procedure has been found which will solve the problem of diphtheria prevention, namely, the adminstration of a mixture of toxin and antitoxin as a measure of active immunization.

If all individuals, or most individuals, were susceptible to diphtheria the toxin-antitoxin mixture might be administered universally, and the problem of immunization would be as simple as smallpox or typhoid vaccination. In those diseases we have no such convenient method of determining natural immunity as the Schick test for diphtheria. However, not all individuals are susceptible to the disease, and the Schick test permits a differentiation. By means of this test it has been determined that new-born babies up to three months of age show a susceptibility of only 15 per cent. This is the same proportion as exists among adults, and is due to the presence of maternal antibodies in the young infant's blood. From this point on, susceptibility increases so that at the end of the second year 70 per cent

are susceptible. After this age the figure diminishes to the adult rate of 15 per cent.[5]

These figures illustrate that if the child be tided over his second year the worst period is passed. Rachford's figures on the mortality-rate of diphtheria in the first two years may be recalled here with profit. The rate the first year is 50.5 and the second year 30 per cent, he states. Furthermore, most cases of diphtheria occur in this early period. It is readily seen that a baby under two years is very apt to lose his immunity, since 70 per cent are susceptible at the end of the second year, although in early infancy only 15 per cent susceptibility is present. For this reason the toxin-antitoxin mixture should be administered to all infants under two years. Zingher[6] immunizes all under eighteen months. In older children he immunizes only the susceptibles determined by the Schick test because the immune children after this age will in all probability retain their immunity permanently.

To make the procedure clear, it will be necessary to describe the Schick test at this point. It consists of injecting a minute amount of toxin intracutaneously and observing the result.[6] The injection properly made causes a wheal to form in which the openings of the hair follicles are visible as small depressions. The toxin is so diluted that one-fiftieth of minimum lethal dose is contained in 0.1 or 0.2 c.c. Packages conveniently arranged with toxin and diluent are supplied by pharmaceutical houses, and many cities and states furnish the material through the local departments of health. If no reaction occurs in forty-eight hours the test is negative, meaning the individual is immune. If the test is positive a zone of infiltration occurs about the site of injection and persists for several days. The color fades to a brownish and subsequently desquamates, leaving a faintly pigmented area. This means the individual is susceptible to diphtheria. In observing the reaction an important caution must be exercised. Sometimes a reaction occurs which is not due to the toxin, but is caused by the proteins of the autolysed bacteria, which are also present in the broth of the toxin mixture. To exclude this type of reaction a control injection must be made consisting of a sample of the identical toxin solution, since different samples vary in bacterial content. The control solution is heated to 75° for five minutes. This destroys the toxin, but leaves the bacterial proteins intact. If a reaction occurs about both toxin and control and disappears in forty-eight or seventy-two hours, leaving little or no pigmentation, the phenomenon is called a pseudo-reaction, and is due to sensitization to bacterial proteins, but not to toxin. It is possible for the same individual to be susceptible to both toxin and bacterial proteins. In such a case we have the combined reaction. Redness and infiltration occur about both areas, but the reaction about the control passes through the stages described for the pseudo-reaction, disappearing in two or three days. The toxin follows the typical positive course as described and desquamates, leaving the pigmented area. With these points in mind the susceptibility of individuals to diphtheria may be determined, allowing for such variations and errors as changing immunity and deterioration of the toxin used in the test.

By means of the Schick test the value of active immunization by the toxin-antitoxin method has been demonstrated, and the duration of its effect noted. This method had been suggested over ten years ago, but the members of the New York Health Department deserve the credit of its introduction. They became interested in the subject when they noted that it required a much larger dose of toxin to kill guinea-pigs that had been injected previously with sublethal doses.[7] From this observation arose the studies which have resulted in the present so-called T A mixture.

The best mixture for immunization is a slightly underneutralized one containing 1.125 to 1.25 units of antitoxin per L plus dose. The immunization is carried out by injecting 1 c.c. of the mixture subcutaneously at intervals of one week. In infants under one year 0.5 c.c. quantities are used. Adults have more severe reactions.[8] By the Schick test it has been determined that 80 per cent of those receiving the injections are immune in two months. Within four months 97 per cent give negative Schicks, and the remainder may be rendered negative by an additional injection.

Concerning the duration of the immunity Park states, in a private communication to Bosler, that "two institutions have been tested for four or slightly more than four years. In the last test there were 76 children with an average of 97 per cent of immunity. In one institution there was 100 per cent, and in another a little less than 95 per cent. In first immunizations we have had from 70 to 90 per cent immunized at the end of three to six months; the tendency has always been to increase the percentage of immunity as the years pass. This gives hope of a permanent immunity. It may interest you to know that we have injected 2,200 infants during the first ten

days of their lives with full doses, but the results as to immunity were disappointing, as only 50 per cent were immunized at the end of the first year."

The position of passive immunization is not altered in an unprotected community. If all children were immunized by the T A method diphtheria would be rare, and a sporadic case would not endanger the contacts. However, in unprotected children passive immunization by the administration of antitoxin should be carried out, since there is no time for the development of active immunity inasmuch as the incubation period of diphtheria is two to seven days. According to Park's figures, showing 85 per cent of adults immune to diphtheria, we should agree with Bosler's conclusion that the indiscriminate administration of antitoxin to adult contacts is wrong. He believes in giving prophylactic doses to children who show positive Schicks. However, it often takes several days before the Schick test can be accurately read. If a child is under accurate enough observation for the Schick test he is certainly under sufficient observation to obviate all measures and should be given sufficient curative doses when symptoms demand as advocated by Tumpeer.[9] On the other hand the immunity bestowed by 1,000 units of antitoxin is very fleeting. Kolmer and Moshage[10] found that 1,250 units of antitoxin in one hundred and eight children from two months to three years is effective for ten days when the immunity rapidly diminishes and disappears in four to six weeks.

CONCLUSIONS

1. Diphtheria can be made a rare disease.
2. The toxin-antitoxin method of active immunization offers a solution of the problem of diphtheria prevention.
3. The value of active immunization has been illustrated by the Schick test.
4. Passive immunization is indicated in contacts who have not been protected by active immunization unless accurate observation of the patient is possible so that curative doses of antitoxin may be given if symptoms develop.

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ACUTE INFECTION FROM THE STANDPOINT OF PUBLIC HEALTH*

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During the past few years considerable advance has been made in our knowledge of the acute infectious diseases, with very few exceptions, from the standpoint of public health. The successful control of the acute infections largely depends upon the widespread dissemination of the knowledge which we have acquired, and the medical profession should be the great instrument by which this is done.

One of the most difficult acute infections to control is scarlet fever, due to the fact that the general public holds to the false idea that cases with light rashes and mild symptoms should not be considered as true cases as those showing marked symptoms. This idea is so popularly held that the laity in many instances have given these light cases the name scarlatina, and fully consider them a separate disease from scarlet fever.

In our present knowledge of scarlet fever or scarlatina (whichever you please) we know that the control of the spread of such disease lies in the early recognition of such cases, their isolation and the detention of contacts, particularly family contacts, for at least a period of ten days or more for the purpose of inspection.

Unless these precautions are used, and the general public is educated as to their importance, scarlet fever will persist as an endemic disease for long periods of time in a community, and will assume, at times, epidemic proportions.

Among the purely medical factors of interest which have developed in the work during the past year or two are those upon the identification of

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the variety of streptococcus instrumental as the cause of scarlet fever. This work has been along the lines of agglutination, and, while not final as yet, there is good reason to believe that the causative organism may be identified in the near future and perhaps so-called "curative sera" made.

Smallpox may perhaps be summed up in the one word *vaccination*. There has, however, been great antagonism in many states during the past few years to vaccination, and a tendency to belittle smallpox as a disease. This tendency is a grave mistake, as the history of this disease shows that, after a period of mild type, smallpox will, from time to time, assume a virulent form accompanied by a heavy mortality.

A useful test for diagnosis in this disease is that upon a rabbit's cornea, and there is also a skin test in which the fluid from a smallpox vesicle is injected into the skin of a person who has been successfully vaccinated or who has had smallpox, a resulting erythema occurring at the site of the injection within twenty-four to forty-eight hours, if the case is one of smallpox.

Diphtheria, as a rule, is not a hard infection to control the spread of. In this disease the control and the diagnosis lie in the routine culturing of the nose and throat of those sick and of the contacts. The success of the culture method of diagnosis depends, first, upon the proper taking of the culture, and, secondly, upon the examination of that culture by an individual properly qualified to do so. When these two factors are properly observed diphtheria is a comparatively easy disease to control as shown by the bacteriological work in all the armies of the late war.

From the point of complications and sequelæ in diphtheria it is always wise to remember that a heavy dose of antitoxin early in the disease is of infinitely more value than repeated small doses late in the case. It should always be remembered that it is the toxin of the organism involved that causes the fatalities and the complications—not the antitoxin.

It is important to recall that Park and his associates have elaborated a toxin-antitoxin that, so far, has produced periods of immunity of considerable durations of time.

Measles from a public health standpoint has remained largely in statu quo for many years, and very little progress has been made in our knowledge of the cause and spread of this disease. Its control depends largely upon a sufficient number of trained observers in any community to carry out the routine inspection of school children, as the well-known catarrhal stage in which infectiousness is so marked is not generally recognized by the laity.

With regard to the contagious diseases of children in general, it should be emphasized that, unless physicians will recognize their duty to the public welfare in every case of contagion, by prompt reports, the continued occurrence of cases due to criminal non-reporting will persist in any community where such practices exist.

Meningitis in the epidemic form, fortunately, is not a frequent visitor. Here, as in other conditions, the important point is early recognition, and diagnosis by means of spinal puncture and culture. All contacts should have cultures made of their nasopharynx for the meningococci, and where such are found they should be isolated, if the organism can be shown to be virulent. Military medicine has demonstrated the importance of early recognition by culture of contacts in this disease.

As far as the treatment is concerned the use of serum very early in the disease would seem to be important in reducing the mortality, and, unless the organism can be definitely typed, a potent mixed serum is important.

Syphilis, in spite of being the most prevalent disease to which the human race is subject, seems until recent years to have been the one most neglected. Large sums of money have been expended within the past few years upon antivenereal campaigns of education. In spite of these efforts the ancient human tendency to promiscuous love seems to be as strong as ever. Granted that you cannot control the vagaries of the sexual instinct, the only hope of the race, unless we are all sooner or later to become syphilized, lies in the proper sexual education of the young when they have arrived at a suitable age. This instruction should be given by carefully picked individuals.

From the public health point of view it is of the utmost importance that treatment, in order to be effective, should be made as early as possible when the initial sore is first seen, and the diagnosis made by dark-field examination. Previous local treatment will in all probability defeat attempts to find the spirochete.

Among other measures which are important in the prevention of syphilis, are those of prophylaxis carried out shortly after coitus. The state law should oblige all drug-stores to carry prominently displayed for sale prophylactic packages; this is already the law in some states. The argument that this will promote promiscuous intercourse will scarcely hold water, as in this day and age that is already extensive and promiscuous.

Gonorrhea is in all probability even more extensive than syphilis, and the same arguments on early educational measures, diagnosis, and prophylaxis apply. In spite of claims to the contrary, there is probably as yet no true specific for gonorrhea, and the course of the disease is largely guided by the experience of the one who attempts to treat it, the surgical cleanliness which is maintained, and continued treatment controlled by the microscope.

Tuberculosis has been the one great condition about which public health measures have been built for the last twenty years, and this disease still takes its toll of 150,000 lives every year in this country. This is largely true because of the lack of co-ordination between the different agencies engaged in promoting public health.

In spite of the huge sums of money spent every year in fighting this disease there is still great confusion in the work, resulting in overlapping of different societies and associations, with irregularity of effort.

As the work on tuberculosis has gone on it has become more and more apparent to those engaged in it that the whole scheme of life is involved in the control of this disease, even from the cradle. Thus the factors entering into the control of tuberculosis comprise proper housing conditions, sufficient pay, sufficient nourishment, prevention of exhaustive work, control of industrial conditions, the segregation of the active cases from the well, and so on.

Until every community can be brought to see the importance of these measures upon their efficiency and happiness, progress in the fight upon this disease will be gradual to say the least.

Influenza has recently given us the pleasure of two exhaustive epidemics, and we are still upon a sea of confusion as to just what is the cause of this disease and how it is communicated.

There are those who claim it is transmitted by droplet infection, and there are others who ascribe its transmission to contamination of eating utensils. There is probably truth in both claims, and the cause is probably an organism as yet not fully identified.

Some states and cities practice extensive closing measures for public places when influenza makes its appearance; others do very little in this line. This variation, of course, is due to our ignorance as yet of the way in which the disease is transmitted.

There is great need of a standardized set of rules to be adopted all over the country for use in guiding us on our preventive measures when this epidemic makes its appearance. So far the great important preliminary precaution to be taken in advance of such an epidemic is organization of the nursing forces of each community and provision for hospital care of those individuals who would not otherwise be properly cared for.

Pneumonia is one of the infections which stands high in the mortality list. A large amount of work has been done on the different types of organisms causing this disease and due to this typing a serum for Type I has been produced, which, if used early in the disease, reduces the mortality to a marked degree. It is generally customary at present to type cases of pneumonia, owing to the general knowledge of the case which is obtained in this way. The laboratories in the health departments of the larger cities all have their pneumonia rooms with their mice and workers. In all probability each case of pneumonia should be isolated, not necessarily quarantined, but isolated in order to prevent cross-infection.

There might be many other diseases taken up from the public health standpoint, but the size of the subject has necessarily limited to consideration those conditions which ordinarily occur in the northern and western parts of the country. Such conditions as malaria, hook-worm, dysentery of different kinds, plague, and other diseases which are not apt to visit us, have been left out.

This discussion has been necessarily brief, and no attempt has been made to go into the more technical points.

A large amount of public interest has been shown of late years in public health matters, and as evidence of this the recent statements of both presidential candidates on the organization of health and public welfare may be taken.

A well-known saying of late years has been that "any community can have as much health as they are willing to pay for," and the intelligent progress of any place may be gauged by the amount of money they spend accordingly.

The medical profession should have its ear to the ground in these days, for, unless they come out and take their own part in civic affairs, which rightfully belongs to them, all sorts of peculiar lay organizations are going to take it for them. This is the day of organization, and the most popular form of the sport is the medicocharitable form under the guise of social service. Social service has a tremendous value as supplementary to public health work, but the moment it attempts

to direct that work, its value becomes greatly impaired.

The two biggest factors in the promotion of public health are, first, the work done upon the hygiene of the child population; secondly, the interest and efforts shown by the medical profession, in which all public health should begin and end.

RADICAL FRONTAL SINUS OPERATION, WITH SOME REASONS FOR FAILURE OF CURE*

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Frontal sinus disease is a serious and often a very dangerous condition, as is disease of any of the accessory sinuses of the nose or mastoid process of the temporal bone.

We meet with this disease in both the acute and the chronic form. The acute form generally subsides under palliative treatment, at least for the time being, but very often recurs and finally develops into the chronic form. It is this chronic form that we as specialists have to deal with most frequently. We see it in many degrees of severity; and histories of the disease often give us a clue to the stubbornness of its resistance to treatment. In fact, fatal complications occur so often that the surgeon's zeal to operate has to be moderated; but a radical operation is the only salvation in many cases. Opening up the sinus may precipitate the evolution of the post-operative complications, some latent focus being roused thereby to activity. Phlegmon of the upper lid or brow is a consequence of the defective drainage or asepsis. It may reinfect the sinus and entail meningitis or cerebral abscess.

The variability in the size and shape of the sinus is an important factor in the outcome, the large cavities having usually thin walls, and dehiscence is frequent. Recesses and crevices may escape complete disinfection, and pus may collect in them, and sequesters form. The ethmoid cells should also be scrupulously investigated. The symptoms of a new infection may take some time to develop, so surveillance after an operation should not be abandoned too early.

In all these chronic cases I would suggest that we first try the intranasal route, which is the conservative way. We will find that the great majority of patients will get so much relief that they can live very comfortably, and that they are frequently cured.

The removal of polypi, resection of the anterior end of the middle turbinate, and curettement of the ethmoid cells are so frequently followed by relief of frontal suppuration that they should be undertaken before the specific frontal sinus operation is performed. If this does not relieve sufficiently, the nasofrontal duct can be enlarged later unless the frontal symptoms are too severe.

The next question, in case the patient is not progressing favorably, is as to when to do a radical operation. Every case is almost a law unto itself. Before contemplating any external procedure we should ascertain, as far as possible, the internal condition of the sinus,—the size and shape,—which can be learned by the *x*-ray, and every surgeon should study *x*-ray plates, for they are very instructive and the more they are studied the more we learn from them. It is very important to get views from different angles and to figure out the correct size and shape. We should *x*-ray the antrum of Highmore to ascertain whether it is infected, and should learn the condition of the teeth. Very often the antra are infected by abscessed teeth extending into the antrum, and the antrum in turn infecting the ethmoid cells and the frontal sinus.

Bacteriological examinations should be made to determine the nature of the infection, for should pure cultures be obtained the vaccine treatment is at once indicated.

Skillern[1] divides the indications for radical operation into relative and absolute.

First, relative indications:

(a) When the *x*-ray shows a large sinus with many ramifications.

(b) When despite frequent irrigations the pus continues fetid.

(c) When headache continues with no apparent change in the secretion.

Second, absolute indications:

(a) When the subjective symptoms are severe enough to interfere with the business pursuits of the patient.

(b) When severe exacerbations occur.

(c) In abscess and fistula formations.

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(d) In threatened cerebral and orbital complications.

(e) Actual appearance of complications.

The most logical type of external operation on the frontal sinuses is that which was recommended by Killian some eighteen years ago. Since it was first advocated various modifications have been suggested with a view to minimizing the deformity. The object of the Killian operation is the ablation of the entire infected mucosa and obliteration of the cavities, thereby preventing future infections and recurrences. The failures resulting from the performance of this operation have been invariably due to the fact that the operator has left some portion of the mucous membrane in some partly exposed part of the sinus, the same as leaving an infected cell in a mastoid operation.

There are two types of imperfect operation (Coakley and Pearson[2]): In one the overhang is left in the upper portion of the anterior wall, the operator being satisfied that he was able to remove thoroughly all the membrane underneath the overhang. This is a dangerous procedure because occasionally a little portion of the frontal sinus will extend upward through a small inlet and then expand out into a fairly good-sized cell. This offshoot of the sinus is almost certain to be overlooked if any overhang is left.

The other and more frequent source of failure has been the presence of a cell situated beneath the horizontal portion of the frontal bone, at the external portion, near the external angular process of the frontal. This cell may be entirely unsuspected unless it is most carefully looked for after widely opening and cleaning out the frontal sinus. A probe bent at right angles and passed externally from the nasofrontal canal parallel to the supra-orbital arch, one-half inch below the arch, will usually find this cell. The anterior wall of this cell is usually flush with the posterior wall of the frontal sinus. The cell extends laterally beyond the outer margin of the vertical portion of the frontal sinuses. This cell is often overlooked when exenterating the ethmoid labyrinth because it extends so far externally over the roof of the orbit. It often has a septum, which runs anteroposteriorly over the roof of the orbit, and has but a small communication with that portion of the ethmoid labyrinth that is on the inner side of a line drawn to the middle of the orbit.

The *x*-ray of the frontal sinus does not always indicate the presence of the cell, owing to its narrowness and to the dense frontal bone overlying it.

The mucous membrane lining this sinus oftentimes fails to manifest much trouble for several years, until the engrafting of a fresh infection causes an increase in the secretion.

Dense cicatricial tissue prevents the secretion from following the line of least resistance into the nose; and the swelling of the scar or upper lid, the evacuation of pus externally, is the eventual common history.

Joseph Beck[3] mentions that, after all has been said and done, there is still another operation which he is going to try out, and that is a combination of the Killian and Lothrop operations, the Killian operation because it opens the sinus sufficiently for one to remove all the mucous membrane and cells, and the Lothrop in so far as removing the interfrontal septum, giving access to the opposite sinus and effecting a large permanent drainage opening by removing the bone surrounding the ostium, thereby draining the diseased sinus into the opposite one and down into the nostril.

In this connection I wish to say that I recently had a patient on whom a Killian operation had been performed a year ago on the left side, but headache, tenderness, redness, etc., recurred several months after the operation. I decided to open up the left side again; and, after satisfying myself that all mucous membrane and cells were exenterated, I removed the interfrontal septum. This patient had a very large natural ostium into the right frontal sinus and a straight septum in the nose. But I notice now, several weeks after operation, that the septum is thickening and blocking the drainage in the region of the ostium, and I am unable to probe the sinus. Just what effect this will have on the disease I am unable to determine at this time.

Another important thing in connection with frontal sinus disease is to ascertain the condition of the accessory sinuses, especially the antrum of Highmore, the ethmoid cells, and also the condition of the teeth. All must be free from infection in order to properly clear up frontal sinus disease.

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THE INTERNAL SECRETIONS OF THE SKIN*

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Mechanotherapy as a method of treatment of disease is being adopted more and more by medical men all over the world. While formerly used mainly by masseurs, Swedish movement experts, in watercure sanatoria, by osteopaths, chiropractors, bone-setting specialists, electric-belt vendors, and what-not, and used by them for better or for worse,—for the benefit of the sick or for their exploitation,—the medical man now also has awakened to the real merit of these various methods. Medical schools now teach mechanotherapy to their students; and the number of its subdivisions or departments and the multiplicity of its application are increasing daily. Swedish movement is directed mainly to the joints and deep muscles, electrotherapy to the nervous system; while hydrotherapy, heliotherapy, thermotherapy, and general massage have the skin as the medium upon which their efforts are exerted and through which their therapeutic results are obtained. Strictly speaking, every form of mechanotherapy is primarily applicable only by way of the skin; even if aimed at the deeper tissues its route of application must be transdermal.

As surgeons we have long been cognizant of the value of external applications in local infections, not so much because we thought of the skin and its function as a therapeutic agent, but more because we hoped to derive, through absorption, a local or a systemic effect from the drugs which we had incorporated into those applications. We refer to ointments, liniments, and various moist antiseptic dressings. Empirically we knew that irritation of the skin enhanced the value of our medicament, and, therefore, ointments and liniments were directed to be applied by friction or prolonged rubbing, and antiseptic applications are generally ordered as hot as can be borne.

Thermotherapy as applied to limbs by dry baking brings the skin to a high heat and induces redness and a rapidly changing blood supply. Hydrotherapy when used hot has the same effect; when applied cold, it relies upon the cutaneous reaction to produce congestion of the skin surface. Heliotherapy and radiotherapy, as applied in the form of general light baths, can exert their influence through the skin only. The deeper tissues are not affected, for it has been ascertained that the short rays of the sun and artificial light have but a very limited penetrating power, and do not reach the deeper structures at all. General massage exerts a constant dermal irritation, and, where properly carried out, leaves the skin with an increased flow of active circulation. The general sanitary cleansing bath, the mud bath, the cold bath in typhoid and other fevers—all have the same dermal effect; and the conspicuous part the skin plays in the profuse perspiration during the crises of pneumonias and in the manifestations of exanthematous diseases, such as measles and scarlatina—all indicate an intense participation of the skin in the pathologic processes and suggest a much greater importance of the skin and its functions than that of mere external protection.

From an anatomical and histological point of view and bearing in mind the tremendous epithelial surface of the rete malpighii, its very intimate relation to the capillary circulation, its abundant nerve supply, as well as its extensive system of lymph spaces, it would seem that other, perhaps more important, functions than that of excretion and mechanical protection might pertain to this tissue.

In considering and dilating upon the well-known fact that rabbits whose skins have been completely covered by an impervious varnish die promptly, and that extensive burns in man may produce death, the physiologist Kreidl suggests that an existence of internal secretion of the skin might be assumed. He says, "The loss of function of large skin surfaces by burns or by varnishing might influence the basal rate of metabolism through default of such part of the metabolic processes as are normally going on in the affected portions of the skin." Here one might conceive that the living skin has the function, either of furnishing certain substances necessary for the basal metabolism, or to paralyze certain toxins by the product of these substances.

Whether its extensive inner surface constitutes the laboratory where metabolic processes go on, changing or destroying toxic agents, or whether it elaborates a secretion, necessary for proper metabolism, similar to the secretions of the thyroid, adrenals, and gonads, must for the present still be left undecided. The hypothetical assump-

*Presented before the Soo Railway Surgical Association at its annual meeting in Minneapolis, Minn., December 17, 1920.

tion of the existence of an internal secretion of the skin is made probable, and the existence of a metabolic and biologic function is made positive, by the contemplation of certain facts. For instance, not only does a close or perhaps compensatory dependency exist between the functions of the various ductless glands themselves, such as thyroids and adrenals, pituitary body and gonads, but there is evidence also of the existence of an intimate connection between these glands of internal secretion and the skin. Clinical facts make this evident. Perhaps the most familiar examples are the appearance of myxedema with the loss of thyroid function; the dependency of certain skin eruptions or pigmentations upon the sexual glands, pregnancy, puberty and the climateric period; the appearance of the bluish discoloration of the skin in Addison's disease, an affection of the adrenals.

Again, the fact that many infectious diseases such as measles, diphtheria, smallpox, spotted fever, and syphilis run their course with a conspicuous and essential involvement of the skin is certainly not without a deeper significance, and points straight to the probable fact that the skin performs an important function in the overcoming of these affections. The established impression that measles and the scarlatina rash must "come out thoroughly" to prevent serious involvement of the inner organs, and that an abundant and well-marked secondary and tertiary lesion of the skin in syphilis is a material safeguard against the later affections of the nervous system in this disease, would suggest and justify the assumption of a biologic protective function in the skin.

That such biologic function actually exists has recently been most beautifully proven by B. Bloch. To give a comprehensive picture of his experiments, it is necessary briefly to refer to what is known as allergy, allergic reaction or allergic immunity. If an animal or person is injected with horse serum nothing unusual may happen until after a period of from eight to twelve days, when a reaction known as serum-sickness, recognized by local redness at the site of infection, urticaria, joint-pain, glandular swelling, and fever, may occur. After subsidence of these symptoms the animal apparently returns to the normal, that is, to all appearances the animal is as it was before; this return to normal or former state is only an apparent one. In reality a far-reaching revulsion has occurred, for if reinjected after weeks or even months the above-mentioned reaction, instead of occurring in eight or twelve days, as before, takes place at once or within a few days,—in other words, the phenomenon of an immediate or hastened reaction, local and general, appears, denoting the existence of a hypersensitiveness of these animals or persons as a result of the former injection. If injected again and over again, the reaction will appear still more promptly and will change in character from an at first violent to a later much milder manifestation. This phenomenom of hypersensitiveness of hastened and changed reaction is known as "allergy" and constitutes the first stages of a developing immunity. It is important for our subject to note that in a large number of infections, such as trichophytosis, tuberculosis, and syphilis, the manifestation of this allergic reaction is first and mainly noted in the skin, forming the basis of von Pirquet's reaction in tuberculosis, and of the luetin reaction of Noguchi in syphilis.

"This allergic reaction to the poison constitutes the first and visible phenomenon indicating the existence of the disease, and is at the same time the very means by which nature attempts to cure. The final aim of the inflammatory reaction is nothing else but the destruction and expulsion of the invading microörganism. The ability to show allergic reaction remains in the body long after the disease that caused it has disappeared. In trichophytosis, for instance, it remains for years, and can be demonstrated even tens of years later; and the same holds goods for variola and for tuberculosis."

To return to Bloch's experiment. He selected a fungus, the trichophyton, and infected the skin of an animal or man. During five to eight days no change took place. Only after the lapse of some time, that is, after the period of incubation, at the site of vaccination a rapidly developing infection took place, which, after running its course receded and the skin returned to the normal. If injected for a second time, the reaction takes place quicker, and is more acute than the first time, and owing to the increased hypersensitiveness to the poison it is much stormier, though shorter in duration. The system overcomes the toxin much quicker and after oft-repeated vaccination the reaction becomes still shorter until at last complete immunity has resulted and no reaction whatever takes place.

It would, of course, be of fundamental importance if we could locate the source and site of this allergic principle, if we could state which organ, or what complex of organs, is responsible for this allergic and immunizing faculty. It is to be re-

gretted that this problem in general has not as yet been solved. We do know, for instance, that in diphtheria and tetanus the immunizing substance is formed in the blood, that is, it is serogenetic. For trichophytosis, however, Bloch has experimentally proven it to be in the cells of the skin itself, that it is histiogenetic. He transplanted a portion of the skin of an individual that had once been experimentally infected with the fungus,—that is, possessed allergic reaction,—onto the body surface of a healthy, not previously infected individual, and was actually able thus to transfer the allergic immunity and to demonstrate its presence. This experiment is fundamental and epoch-making as far as the site of the biologic function of the skin is concerned. It is evident that it is the skin, the epidermis, that possessed the allergic faculty. Thus Bloch has proven and demonstrated beyond cavil that the skin possesses an important biologic protective function.

It is, therefore, not surprising, but is as it should be, that the peeling of scarlet fever, the furfuraceous débris of the skin, should not be infectious as it once was thought to be. It may even contain certain valuable biologic principles, which, when fed or injected, might produce an immunity to this disease.

What has been said of the trichophytosis we have reasons to believe holds good also in tuberculosis, where the allergic reaction of von Pirquet is so easily demonstrated. The same can be said of syphilis.

The value of heliotherapy, sun baths, and Alpine light in the treatment of tuberculosis by stimulating the skin and its biologic function (or internal secretion, if you wish) thus becomes not only apparent, but also important, and demands of us as surgeons that we should utilize and exploit it.

As regards syphilis, it may be well worth while also shortly to emphasize the importance of the biologic function of the skin (or shall we say of the internal secretion?) in this polymorphic affection. It has often been noted by men of authority that patients with luetic nervous affections, such as tabes, have had but remarkably little involvement of the skin during the early course of their infection; and, conversely, it has been remarked that in countries where this disease is so frequent as to be almost endemic, nervous lesions are conspicuous by their absence. This antagonistic relationship between extensive early or secondary and tertiary lesions of the skin on the one hand, and the occurrence of the late luetic nervous manifestations on the other, may readily be explained by the assumption that the early and persistent location of the spirochetes in the skin causing well-marked secondary lesions has served to develop in it a sufficient quantity of immunizing substances to appreciably reduce the number and virulence of the germs, thus safeguarding the inner organs, especially the nervous system.

Much more might be said in this connection; however, it is our aim principally to draw attention to a function of the skin far more important than that of excretion and mechanical protection. Having proven the existence of a biologic protective function it is not at all unlikely that such methods of treatment as heliotherapy, Alpine light, massage and thermotherapy exert their beneficent effect mainly by stimulating the skin in some way to an increased exercise of its biologic principle or to a more profuse production of what we assume to be an internal secretion. Assuming this to be true and recognizing its immense potential value we must as surgeons look upon the skin with a great deal more of respect, and must for this reason endeavor to utilize and exploit the principles of mechanotherapy to a much greater extent than has been in vogue formerly.

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"SLEEP SICKNESS"

The above term is used advisedly in order to change the commonly used term "sleeping sickness." This term covers a wider field than "sleeping sickness," which should be applied only to that form of sickness which is found in Africa and is due to an infection carried by an insect. But the term "sleeping sickness" has been so commonly used for our influenzal sequalæ that it is rather difficult to get away from it. There have been a few of these cases in Minneapolis, and probably throughout the state there have been others that have not been fully reported. From the East and other sections there continue to come reports of like epidemics which seemingly spread very rapidly. This condition exists, too, in other countries, such as England, Ireland, Spain and Scandinavia. In New York state they seem to have more trouble of this kind than elsewhere, and on the 16th of February it was reported that the forty-eighth death and the one-hundred eighty-seventh case had been reported to the local health department.

There is no need for any public uneasiness, because this form of lethargic encephalitis or sleep sickness is not contagious, neither can it be considered communicable. The number of cases of lethargy from influenza at the present writing are not as numerous as they were eighteen months ago, but, for some reason and within a short period of time, there have been a number recorded and reported. One should be on guard, however, not to decide hastily that people who are drowsy and dull and apathetic or sleepy have sleep sickness. This was very well illustrated in a recent case in Minneapolis where a diagnosis of sleep sickness had been made. The patient assumed a typical drowsiness and indifference, and then suddenly became comatose, had a convulsion, and died. The autopsy revealed a large tumor of the brain, and without the characteristic signs of lethargic encephalitis. Then, too, one must always keep in mind that other constitutional diseases may be accompanied by such things as just suggested—brain tumors, uremias, luetic conditions, and so on, all combined to make a picture closely simulating the lethargy of post-influenzal states. And yet, sometimes, after a careful search is made, the true conditions may be revealed. It is quite certain that there has been more or less influenza in the cities during the last two months. It has taken a varied course, sometimes bronchial, frequently gastro-intestinal, and sometimes just the ordinary common form. People are not as sick as they were, however; they do not complain as much as they did; and they get better more readily. At the same time, the possibility of a recurrence or of lethargic conditions must be kept in mind, for we may wake up to find things are very wrong.

Strangely, there has been no report from the vaccinationist and his serum for the cure of influenza, perhaps for the reason that there has been comparatively little pneumonia following the present pandemic state. Then, too, some very unfortunate results have been reported following the use of vaccine, and that may have made some difference in its administration.

GOVERNMENT HOSPITALS

The government finds that the hospital situation is quite inadequate to meet the needs of the soldiers who were sick or were wounded in the late war. The number seems to be increasing much more rapidly than was at first thought possible. Some men have been kept at home for a year with the expectation and hope that they would recover sufficiently to go to work. Others have been transported from hospital to hospital, transferred from a general hospital to a special hospital, and yet the oncoming tide of applicants for hospital beds is steadily increasing.

It was thought for a time that the peak of the neuropsychiatric load would be reached in five years. That time has now been extended to ten years, perhaps longer, and these particular

types of neuroses and psychoses have no place to go except some large hospital which is more or less crowded and into which these people are more or less necessarily herded. Then, too, the great question is the necessity of these cases being sent to special hospitals. There are, undoubtedly, many who must receive special attention, individual attention; and there must be a large number who simply are looked upon as institutional cases or asylum patients.

No one yet knows what is to be done, but the government is making every effort to increase its hospital facilities. It is now seeking an appropriation of more than $10,000,000 in order to acquire or erect hospitals for sick soldiers. Surgeon-General H. S. Cumming, of the Bureau of Public Health Service, reports that at present twenty thousand cases are scattered in thirteen different institutions, some of which are flimsy and inflammable buildings. This is very unfortunate, considering the many disabled veterans. And the experience of the government has shown that it is necessary to make even greater preparations than was anticipated by the wildest enthusiast immediately after the war. Then, too, there must be an enormous problem in providing officers, medical and otherwise, for these various hospitals, for it requires a good head and a stabilizing mind to run an institution for sick soldiers, just as it requires the same type of man to run an institution connected with industrial work.

Asbury Hospital, in Minneapolis, which was recently taken over by the government, within ten days from its opening and the time Dr. Bracken and Dr. Wipperman were placed in charge, was subjected to a loud complaint of neglect which ran through the newspapers and finally was taken in hand by the American Legion, who, after hearing the reports of the soldiers in Asbury Hospital, openly announced and publicly published the fact that there was no warrant for any complaint whatsoever against Asbury and the present management. All of this was due to some wild-eyed individual who had no insight into the situation, who had heard rumors of complaints and promptly put them into circulation while they were only rumors. It created a great deal of annoyance to those who knew the situation, but it was a great satisfaction to have the American Legion come out and clear the matter up promptly and vigorously. The men in Asbury who have been in other hospitals in various parts of the country say they have never received as good treatment as they have had in Minneapolis. This, however, does not constitute the subject of this editorial.

The necessity of increasing the hospital beds for soldiers is evident. And evidently, when this is done, there will be another phase of the situation to be considered, and that is, how long shall these people be kept in a hospital before they are either discharged or transferred to other quarters? What is really best? Shall they be under the care of specialists or a staff composed of medical, surgical, and special men, such as they have at Asbury? The latter plan, so far, has worked out wonderfully well, and it seems an ideal way to take care of these men. The men who compose the staff will have to be supported by the local men in everything they undertake to do. It is no easy task to commandeer a man and his time and pay him a very small wage to look after government cases, yet, so far, each one has been liberal with his time and has given the best that is in him.

A SERIOUS HOSPITAL SITUATION IN MINNEAPOLIS

Minneapolis has suddenly aroused itself to the fact that additional hospital facilities are needed, and is already planning for ways and means whereby the hospital conditions can be improved. Someone who was interviewed the other day about hospitals stated that fifty patients are daily declined admission in Minneapolis hospitals because there is an insufficient number of beds. That may or may not be true. It is probably true, because there are many people who should go to hospitals but do not because they fear the crowded condition that already exists. Here, again, is a grand opportunity for someone to immortalize his name and the family name by building a hospital, a memorial hospital, that will accommodate the increasing numbers who apply for hospital aid.

As we have said before, only one Minneapolis hospital has been built by one man, and that is the Children's Clinic, the money for which was donated by Mr. T. B. Janney. This hospital was built during the time of high prices, and cost approximately $200,000 fully equipped. This hospital perhaps can be duplicated for a smaller sum now, or at least some time during this year. The price of materials is coming down in some particulars and the price of labor will be reduced, and so the present situation may continue while other measures are taken to meet the immediate needs of the city.

A hospital with 200 beds would perhaps cost about one-third more than one with 100 beds. It is, of course, unwise to quote costs, because one's idea of a hospital may differ from those of someone else. Formerly hospitals could be built for $1,500 a bed, and now, with modern construction and equipment, the cost is said to be $4,000 a bed. That would mean $800,000 for a 200-bed hospital. This can be very materially reduced so that it will come within the reach of some man of means who has the money and who should invest it in a hospital building.

On the other hand, if we cannot get someone to build a memorial hospital, we must turn to individuals who will build individual hospitals, that is, pattern after the London situation in a measure, erecting what, over there, are called "nursing homes." These hospitals are small buildings accommodating a limited number of patients, and not infrequently they are buildings that are remodeled for this express purpose. But such a venture means the investment of a considerable sum of money, and if all the men in the various specialties were to erect hospitals or reconstruct buildings into hospitals, it would create an embarrassing situation. For instance, if every eye-and-ear man in Minneapolis decided to build a hospital for his own use, or conduct a hospital, we could easily have sixty or seventy-five new hospitals here. But these men are not very anxious to assume the responsibility of owning or even conducting a hospital for their own cases, and no man should attempt to do this unless he has an unlimited supply of patients and can keep his hospital full. One who can do this would lose no money in his hospital and he would have a place to work and do exactly as he would like to do. The various sanitaria that are in operation in Minneapolis furnish a good working example for the man who is anxious to try it for himself. The first thought should be a competent manager, preferably a nurse, well trained, not only in her calling, but in modern methods of conducting business. She must, perforce, be a good housekeeper, as well, and a good buyer. Then, also, she must be a good dispenser of foods, otherwise known as a dietitian, and yet know how to manage and get the best results from her expenditures. Such people are very difficult to obtain; in fact, there are very few who can do this sort of work, and that is one of the reasons why sanitaria are successful or go under with little extra pressure. If a sanitarium or private hospital is not conducted as it should be, it soon becomes known as a hospital without a head, and the service then becomes inferior, the care of the patients is poor, and the progress and recovery of the cases is very uncertain.

The city has a great deal at stake, and the investigations of a recent grand jury brought to light the necessity of a new hospital for the care of those who have chronic diseases other than tuberculosis. At present Hopewell Hospital is used as a sort of combination hospital in which tuberculous and venereal cases and chronic helpless cases are all kept. There is no objection to this, of course, with modern methods of sanitation, but there is serious objection to Minneapolis allowing its cases to be crowded by crowding an institution that is somewhat antiquated beyond its capacity. The only way to remedy this is to build a hospital and provide it with all modern appliances.

The editor would like to call attention again to the fact that Toronto put $5,000,000 into a hospital, and if the city of Toronto can do this, the city of Minneapolis should follow immediately the example set by this smaller city in Canada.

THE PASSING OF THE MINNESOTA PIONEER PHYSICIANS

Minnesota, we feel confident, has justification above every other Western state, in feeling pride in her medical pioneers, to whom is solely due the high standard of her profession of today, as manifested in an unexcelled medical school (a department of the University of Minnesota), and a standard of licensure which has always barred the graduates of low-grade medical schools from entrance into practice within her boundaries. Much has been written of these men; too much never can be.

These men practiced before many of the branches of the medicine and surgery of today were known, before practically any of our instruments of precision had been conceived of, but they had trained eyes, trained ears, trained touch —what Dr. Corbett, in a paper in our last issue, fittingly called "vision." They somehow saved life and rendered their fellow-men service. They were honored by their generation, and their memories deserve honor from the present generation.

These memories and a flood of others are suggested by the retirement from practice, on account of failing health, of one who was a link between the pioneers and the men of today, Dr.

James A. Quinn, of St. Paul, for many years chief surgeon of the Great Northern Railway.

Dr. Quinn studied medicine with Dr. J. H. Murphy, and was associated with him in practice when Dr. Murphy was chief surgeon of the same road. These two men were the only chief surgeons this great railway line ever had.

Dr. Quinn, after his preliminary studies with Dr. Murphy, went East and graduated from the Columbia University College for Physicians and Surgeons and then returned to St. Paul to continue work with Dr. Murphy, succeeding him upon Dr. Murphy's death.

It is not our purpose to write a memorial of Dr. Quinn, but only to extend to him the best wishes of THE JOURNAL-LANCET and of the entire medical profession of the Northwest, all of which he has richly earned by an honorable and useful professional career extending over many years, and by a forcefulness of character and a geniality in his relation to all men which have made him a prince of good fellows.

MINNEAPOLIS THIRD CLINIC WEEK

It has been definitely determined that the third annual Minneapolis Clinic Week will begin on Monday, April twenty-fifth, and extend to and include Friday, April twenty-ninth. The probabilities are that the opening will be on Monday evening, but as yet no definite announcement can be made of the nature of the meeting or the special features of Clinic Week. The active clinics, however, will begin on Tuesday morning, April twenty-sixth, and before that time announcements will be made and special bulletins will be prepared for distribution.

The Executive Committee of the Clinical Section of the Hennepin County Society is in communication with several leading men of the country, and we are assured that in our next announcement we can give a little more definite information as to the speakers who are to be with us on Wednesday night, the twenty-seventh of April, when the Hennepin County Medical Society gives its annual dinner. Then, too, the arrangements are practically made for Thursday night, when the Ophthalmology and Oto-Laryngology Society gives its dinner and has its special speaker. Something out of the ordinary is expected on that evening.

The special outside speakers will occupy the late afternoon and evening hours. The afternoon meeting will be, as formerly, from four to six.

There will be ample hospital facilities and ample clinics arranged, and, undoubtedly, the Government Hospital will be glad to contribute its share in the clinical work.

As has been said in another editorial, the former Asbury Hospital, which is now under Government control, has a good staff, and undoubtedly these men will be very glad to give whatever assistance they can in making the Clinic Week interesting.

MISCELLANY

THE CURE FOR SICK PUBLIC HOSPITALS

The Vancouver (B. C.) *Sun*, of February 16th, contains an editorial so full of common sense and wisdom as to the cure of a sickness prevailing in British Columbia, that it seems worth considering in the United States for the same form of disease.

The editorial follows:

HOSPITALS AND BUSINESS

Business management, earning capacity, safe margin of profit over cost, giving people with money to spend a chance to spend their money, are all factors just as necessary in a hospital as in a modern hotel.

While the Province was in the pioneer stage, small hospitals could be and were kept open on a combined business, charity, deficit met by government and civic contribution basis. Every year the making of the balance sheet brought appeals to Government and city; in response the hospital would be lifted over the bumps and started on another year of financial uncertainties.

Those days are gone. The enormous costs and outlays of modern hospitals cannot be met by casual financing. There must be a complete reorganization. Business principles must be supreme in hospital management.

Instead of semi-charitable institutions throughout, the hospitals must be reorganized along the lines of first-class hotels, with the adjunct of semi-private wards and regular wards in which care and treatment can be given those whose means are insufficient to pay the charges.

The expenses of these charitable adjuncts can be accurately estimated, and government and civic grants expended for their upkeep.

The city cannot afford to lose money on cases originating outside of Vancouver. These must pay their own way or the Government must pay for them. But what both the city and Government can refuse to subscribe to, is a one- to ten-dollar per day service on which the hospital only collects half. Super-service, whether for room, food or medicine, can and will be paid for as soon as people are educated to the fact that they can no longer sponge on the hospital.

The hospitals themselves have fallen ill; the remedy is business. Selling at or below costs means bankruptcy. Hospitals as at present designed and managed, secure only the unprofitable parts of the business, just the same as if the largest of city hotels should try to sell accom-

modation on the methods and prices of a country inn. Inefficiency and bankruptcy are the certain results.

Getting the money will have to be combined with curing the sick, in order to keep the hospitals going.

CORRESPONDENCE

TOO BIG A DOSE: A CORRECTION

To the Editor: I find in my discussion of Dr. Nippert's paper, in The Journal-Lancet for February 1, on page 69, an error in the third paragraph, in which I am made to say "the calculated Eggleston dose, that is, 15 c. c. of the tincture," etc., which should be made to read "the calculated Eggleston dose, that is, 0.15 c. c. of the tincture per pound of body weight."

The error is, of course, gross enough to attract anyone's attention, but I believe this correction should be given publicity.

Very truly yours,

S. M. White, M. D.

Minneapolis, Minn., Feb. 17, 1921.

VACCINATION AND QUARANTINE

To the Editor:

I beg to differ with one of your statements in your editorial on "Vaccination and Quarantine," namely: School children "who reject the vaccination are not permitted to attend school."

I will be specific: In one room in the Clinton School alone, out of forty children in the room, only five are vaccinated, and three cases of smallpox were taken out of the room, and treated by Chiropractors and Christian Scientists.

The Whittier School is worse. Children come to school a week with smallpox and only when they show the eruption do they stay home. The only thing they do is to send slips home to the parents asking their consent to vaccinate the children, but without their consent no vaccinating is done, and the children keep on going to school. Yes, the teachers are vaccinated, but the children, who are the susceptible ones, are not—as a rule. Yours truly,

F. T. Poehler, M. D.

Minneapolis, February 5, 1921.

ANSWER

Dr. Poehler is right in his statement that pupils who are not vaccinated are permitted to attend the Minneapolis schools; but he is wrong in his statement that there is a room in the Clinton School, containing forty children, only five of whom are vaccinated.

The Clinton School has seventeen class-rooms, and the number of unvaccinated children in that school a week ago (February 17th) was seventy, distributed in the different rooms as follows: 18, 12, 10, 7, 7, 6, 4, 3, 2, 1, 0, 0, 0, 0, 0, 0, 0.

Upon inquiry as to the reasons why there were eighteen unvaccinated pupils in one room, with none in seven other rooms, we learned that it was simply indifference on the part of children and parents, there being but one case of parental opposition among the parents of the pupils, who, in this room, are in the fifth and sixth grades, indicating ages where indifference would be expected.

Dr. Poehler is also in error in his statement that three children with smallpox were taken out of the room referred to; and he is likewise mistaken in his final comment that the "children are not vaccinated, as a rule."—The Editor.

BOOK NOTICES

Massage and Exercise Combined. A Permanent Physical Culture Course for Men, Women and Children. Health Giving, Vitalizing, Prophylactic, Beautifying. A New System of the Characteristic Essentials of Gymnastic and Indian Yogis Concentrating Exercises Combined With Scientific Massage Movements, With 86 Illustrations and Deep Breathing Exercises. By Albrecht Jensen. Cloth. Price, $4 net. Pp. 93. New York: The Author, 1920.

The system of combined massage and exercise described in this book is excellent. It is applicable alike to the weak and the strong, and combines the benefits of exercise with the salutary effect of scientific massage. No apparatus is required. The exerciser does his or her own massage and can so grade the performance that no undue fatigue can vitiate the results.

The detailed descriptions of the exercises are further clarified by photographic illustrations. One has only to try the exercises to be convinced of their value.

From the standpoint of the gynecologist the system is well worth careful study.

R. T. La Vake, M. D.

Handbook of Diseases of the Rectum. By Louis J. Hirschman, M. D., Detroit College of Medicine. Third Edition Revised and Rewritten. Price $5.00, St. Louis: C. V. Mosby Company.

The author's grasp of the subject is masterful and his work concise and comprehensive. The practical nature of its contents entitles the book to a careful perusal by every general surgeon and internist.

The author's point is well taken when he reproves the profession generally for its ignorance in regard to many ailments of the lower part of the digestive tube, and blames directly this ignorance for the many irregulars and charlatans taking up the treatment of this class of cases.

In proper sequence the book portrays from "A to Z" the subject under discussion.

The illustrations are numerous and very fine, and the accompanying text is clear and to the point.

The frequent repetitions in regard to local anesthesia might well have been omitted after giving the method once in detail.

The importance of these diseases is so great, and, when intelligently treated, the relief so wonderful that it behooves the profession to read and study closely this admirable and timely book.

C. Nootnagel, M. D.

NEWS ITEMS

Dr. C. M. Morton, of New Effington, S. D., died last month.

Dr. E. C. Gaebe, of Halliday, N. D., is to move to Harvey, N. D.

Dr. C. G. Lundquist has moved from Wetonka, S. D., to Leola, S. D.

Dr. H. A. Murnan has moved from Gregory, S. D., to Denver, Colo.

Dr. F. W. Deason has moved from St. Thomas, N. D., to Grafton, N. D.

Dr. J. P. Guilfoyle has moved from Stephen, Minn., to Evansville, Wis.

Dr. W. W. Nutting has moved from Bowman, N. D., to Marmarth, N. D.

Dr. H. P. Dredge, of Sandstone, has gone to Chicago for a month's post-graduate work.

Dr. Paul Fowler, of Blaine, Wis., has become associated with Drs. Crewe & Gamble, of Rochester.

Dr. John L. Rock, a member of the More Hospital staff, Eveleth, was married last month to Miss Doris Palmer, of Wilmette, Ill.

Dr. J. W. Towey has moved from Cannon Falls to Worthington, where he is connected with the Southwestern Tuberculosis Sanatorium.

Dr. F. F. Slyfield, of Duluth, has returned from New York City, where he has been doing postgraduate work for the past three months.

Dr. L. D. Peck, of Hastings, resigned as Dakota County Physician last month, and was succeeded by Dr. R. C. Radabaugh, also of Hastings.

Dr. E. J. Huenekens, of Minneapolis, has been chosen president of the Hennepin County Public Health Association, and Dr. H. W. Cook vice-president.

Dr. I. D. Tiedemann, a graduate of the University of Illinois, class of '16, has become associated with Dr. A. G. Chadbourn in hospital work at Heron Lake.

Dr. E. A. D. Jones has moved from Valley Springs, S. D., to Garretson, S. D., where he will occupy the offices of Dr. R. Reagan, who has moved to Sioux Falls, S. D.

Twenty-five physicians of Mitchell, S. D., met in the Elk's Club some days ago to discuss the proposed eugenics law now before the South Dakota legislature. Opposition to the bill was unanimous.

Dr. George W. Frasier, of Hill City, has gone East for postgraduate work. He will specialize in dermatological and genito-urinary work, and will locate in Duluth upon his return.

Detroit (Minn.) has a new hospital. The hospital building, which was originally erected for hospital purposes, has been occupied for some years as a residence by Dr. L. C. Weeks.

Dr. J. P. Chance, of International Falls, recently discharged from active army service, has been appointed director of the War Risk Insurance Bureau, and has gone to Washington to take up his work.

Dr. J. N. Risjord, of Fertile, is spending four months in postgraduate work in the Illinois Postgraduate Medical School in Chicago. His studies will be confined to laboratory work and abdominal diseases.

Dr. H. E. Wunder, who has been associated with Dr. Shipman for several years on the Iron Range, has become associated with Dr. Budd, of Two Harbors. Dr. Wunder has just returned from New York City, where he did postgraduate work.

The Glen Lake (near Minneapolis) Tuberculosis Sanitarium wants a million and a half dollars to provide 200 additional beds. The Hennepin County Medical Society indorsed the request to the legislature that bonds be issued for this purpose.

Dr. F. R. Smythe, of Bismarck, N. D., resigned last month his office as Poor Commissioner of the city, and was succeeded, upon his recommendation, by a *layman,* Miss Ruth D. Kolling. Dr. Smythe is a public-spirited man and gives much time to public work.

Dr. John Coy Farmer died on February 12th at the age of 50. Dr. Farmer was a graduate of the Medical School of the University of Minnesota, class of '95, and after practicing a short time in Minneapolis, located at McKinley, where he has practiced since.

Dr. P. L. Halenbeck, who has been associated a few months with Dr. F. A. Allen, of Crosby, has purchased of Dr. Allen a half interest in the Cuyuna Range Hospital. Dr. Halenbeck is a graduate of Rush, class of '19, and served in the World's War somewhat over a year.

The U. S. Civil Service Commission announces examinations, at the usual places, of applicants for the Federal service. The positions now open are for a senior assistant, assistant, and junior assistant physician, in Saint Elizabeth's Hospital,

Washington, D. C. The salaries range from $1,500 to $3,500 a year with maintenance.

Dr. James Ewing, professor of Pathology of Cornell Medical School, will give the annual Alpha Omega Alpha address on March 10, at 8:00 P. M., in the amphitheater of the Anatomy building of the University of Minnesota. His subject is "The Place of Pathological Anatomy in Modern Medicine." The public is invited.

A nutritional clinic held at Bemidji last month promises some interesting and valuable results. Twenty undernourished school children were selected for special care. Their diet will be looked after, and they will be examined every Saturday and given instructions for the next week's care of themselves. The final results will be published.

A survey of the Medical School of the University is now being made by a committee of three distinguished outside medical men,—Dr. Victor C. Vaughan, of the Medical College of the University of Michigan; Dr. John Finney, of Johns Hopkins, of Baltimore, Md.; and Dr. Frank Billings, of the Medical School of the University of Chicago.

Dr. A. J. Chesley, epidemiologist of the Minnesota State Board of Health, in his annual report to the Board, called attention to the increasing death-rate from measles and whooping cough, which took death tolls in the state in 1920 as follows: Measles, 158; whooping cough, 293. Influenza caused in the year 2,199 deaths, or 60 less than the number caused by consumption.

Dr. James A. Quinn, of St. Paul, has resigned as chief surgeon of the Great Northern Railway on account of rather poor health, and has gone to Florida for the remainder of the winter. Dr. H. B. Zimmerman, of St. Paul, has been appointed chief surgeon, and is to be assisted by Dr. John B. Rogers and Dr. W. A. Dennis as consulting surgeons. Reference to Dr. Quinn's retirement is made in our editorial columns.

Dr. E. O. Giere, of Watertown, S. D., has been appointed chief of staff of the St. Paul Hospital, St. Paul, to succeed Dr. E. Boeckmann, who is giving up active practice. Dr. Giere was chief of staff of the Ebenezer Hospital of Madison, Minn., from 1903 to 1915, when he moved to South Dakota, and has been chief of the staff of Luther Hospital of Watertown for several years. Dr. Giere will begin his work in St. Paul on May 1st.

On February 9th the Grand Forks District Medical Society, of Grand Forks, N. D., gave a special program and banquet at which the members of the Cass County Medical Society and the Traill-Steele Medical Society were guests. The evening entertainment was opened by a banquet served in the Commercial Club rooms, and this was followed by a very interesting program given by the faculty of the College of Medicine of the University of North Dakota.

A prominent attorney of Virginia (Minn.) who spent some time in the "Retention Hospital" of that city while sick with smallpox, is loud in his praise of the hospital, and he thinks it high time that people should know the difference between the retention hospital of today and the "pest house" of yesterday, for such knowledge will lead people to seek entrance to such hospitals on proper occasions, instead of employing a lawyer to keep them out of them.

INSTRUMENTS, BOOKS, AND FURNITURE FOR SALE

The instruments, books, reclining chair, couch, and desk and chair of the late Dr. F. J. Duggan, of Grand Forks, N. D., are offered for sale cheap. Address Mrs. F. J. Duggan, 321 No. Third St., Grand Forks, N. D.

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A large clinic and hospital in a fine city of South Dakota wants a clinician, mainly for routine work. No Wassermann or tissue work required. Wages $150 a month. Address 111, care of this office.

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In a fine Minnesota village near the Twin Cities. Population 1,000, with over 2,000 in the summer. New community school building cost $150,000; 15 teachers. Large country, thickly settled. Only one physician now in place. Village has electric lights and waterworks; sewers now building. Good physician is sure to do well from start. Nothing to buy. Address 114, care of this office.

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Dairy region of Minnesota. Live modern little city with all conveniences, including hospital, fine schools, etc. Surrounding country well developed, good roads. Predominating farm product is butter (monthly cream checks). Practice remunerative, general; equipment complete and modern; real estate optional. Price reasonable. If you are not financially fitted do not answer. Address 113, care of this office.

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The Management of an Infant's Diet

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In a very large percentage of cases of constipation in early life, this annoying condition is due largely to some fault in the diet, and usually the difficulty can be easily traced to an incomplete digestion of protein or of fat. By changing the food and advising a daily diet prepared according to

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The Medical Protective Company of Ft. Wayne, Ind., has rendered the medical profession a very great service, somewhat akin to the service rendered the public by the medical profession in its efforts to stamp out disease and improve living conditions. This Company is fast making damage suits unprofitable, and it is giving the individual doctor absolute protection against financial loss in the form of a verdict in malpractice suits. For the former and larger service it receives no pay; for the individual protection in the form of defense of suits and payment of verdicts, it receives only a moderate fee—we might say, a wholly proper fee.

This Company is worthy the utmost confidence of every physician.

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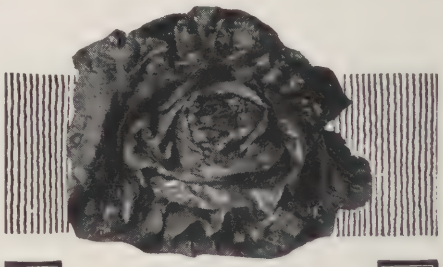
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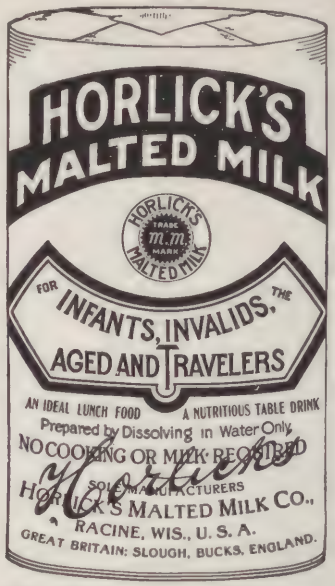
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THE PAST OF THE MEDICAL SCHOOL OF THE UNIVERSITY OF MINNESOTA

By RICHARD OLDING BEARD, M. D.
UNIVERSITY OF MINNESOTA

FOREWORD

This address upon the history of the Medical School of the University of Minnesota was given by invitation of the Medical Six o'Clock Club at its mid-year banquet on February 16, 1921. This organization includes all members of the medical faculty and all students of the School.

The address has been supplemented by a few paragraphs, prepared by Drs. Beard and Robertson, which bring the history up to the present date. It is published by request of the Club.

EXECUTIVE COMMITTEE,
Medical Six o'Clock Club.

I trust that the acceptance of an invitation to tell you of the ancient history of The Medical School does not confess myself an ancient of days, although I shall have to plead to the fact that, with the passing of my devoted old colleague, Dr. James E. Moore, I am the oldest active member of the faculty, in years and in service, and, indeed, the only remaining active member of the original faculty of the Medical School. So it is fitting, perhaps, that I should try to tell you the story of the elder days.

It is a difficult thing to put life into dead facts, as it is into dead folks. They live again in the minds of those who have lived with them, but it is hard to energize them for you who are living so newly and so intensely in the present. Nevertheless, I am glad that you want to know about them.

One cannot write the birth certificate of the Medical School, originally known as the College of Medicine and Surgery, without giving some account of its parentage. I wish I might go back to the grandfather days,—to the period of medical preceptorship in Minnesota, when men studied medicine without a college and took their license to practice from the little pharmacy in the rear of the old doctor's office. I do not remember those days, but the tale of them is often heroic reading. The old men sacrificed much to serve as the parents of a fitting professional offspring. The young men suffered many things in the endeavor to follow in the footsteps of their rugged but great-hearted teachers. Many a lonely Elijah of the pioneer days in the Northwest dropped his well-worn mantle upon the shoulders of an aspiring pupil destined, with the passing of the years, to be greater than he.

I wish I might tell you of the infancy of organized medical education in Minnesota—of the first-born St. Paul Preparatory School, where in the second story (a single room) of the old stone dead-house in the rear of St. Joseph's Hospital, with an old pine table and a few kitchen chairs, a few books and a skeleton, Drs. Daniel W. Hand, Alexander J. Stone, and the elder Stewart taught medicine to a handful of medical students, who dissected an occasional amputated limb handed out to them from the old hospital. And then, too, of the near-twin Preparatory School at Winona, fathered by Dr. Franklin Staples, and how the twins soon contributed to

the infant mortality of prematurely born colleges.

I should like to tell you something of the history of the St. Paul Medical College, organized years later by my old friend, Dr. Alexander J. Stone, who was determined that medical education should live in Minnesota and who lived to see it thrive under the control of the University. And then, also, to tell you of its neighbor school, the Minnesota Hospital College, organized in Minneapolis by Dr. Frederick A. Dunsmoor, united with the St. Paul School subsequently, and again divorced from it still later. I should like to paint for you the picture of the old Winslow House, on Main Street hill, upon the site of which the exposition building, recently the barracks of the late lamented Students' Army Training Corps, stands; where the Minneapolis College had a lecture-room or so and some twenty hospital beds, and wherein the present speaker began the teaching of physiology with nobody and nothing to help him but what he had in his head and could get to the tip of a somewhat awkward tongue. I could tell you many enlivening stories of those early days, and among them, of the midnight ride of Paul Shillock, now Colonel in the U. S. Army, and a group of his student associates; conveyance,—a hired horse and wagon; arms,—a few shovels; destination,—Lakewood Cemetery; objective,—a newly-made grave; capture,—a rare prize in those days,—a "stiff"; surprise,—by unexpected enemy, a sheriff's posse; get-away by the boys, barring Colonel Shillock, who, missing the tail-board of the rapidly disappearing wagon, fell a prisoner into the arms of the sheriff and was bailed out next morning by a deeply-shocked and duly-astonished faculty. And the interesting sequel to that story is that "the stiff," not having any friends, was dissected before all that was left of him was returned to his empty grave!

First-fruits of that early teaching, the speaker counts it among the honors of his service as a medical educator that Dr. Arthur J. Gillette, of St. Paul, and Dr. George G. Eitel, of Minneapolis, were students in the first classes he taught and that he retains to this day the affection of both his early pupils.

But the time you have been able to allot to the past of the Medical School is brief, and I must hasten on to the record of its actual birth.

In 1883 a plan prepared by President Folwell, the late Dr. Charles N. Hewitt, then State Health Officer, and the late Dr. William H. Leonard, a homeopathic physician of this city, was presented to and adopted by the Board of University Regents. It created the College of Medicine and Surgery of the University of Minnesota, as an examining, but not as a teaching body. At the same time the Legislature passed the first State law regulating the practice of medicine and requiring all physicians to register with the faculty of this College.

Dr. Perry H. Millard, I have reason to believe, was the inspiring mind back of this movement. He acted as Secretary and Executive Officer of the Faculty of nine men. For four years the College served the purpose of a State Medical Examining Board. The only record I have been able to find of the qualifications to practice medicine this Board imposed is a scrap of paper in the almost undecipherable handwriting of Dr. Millard. Master of many things, he could not write and I am confident that no one less familiar than I with his attempts could read those lines. They tell us that the physicians of that day had to present evidence, by diploma, certificate, or examination, of—

1. Attendance upon one full course of lectures.
2. A familiarity with the literature of the subject.
3. Clinical and laboratory experience.
4. Skill in the actual use of physical and chemical tests in diagnosis.
5. Dissections of the muscular, nervous, and circulatory systems.

Could anything be more subtle or more elastic?

The course of lectures might be taken by day or by night and in one year, two years, or three. The accepted literature was little more than Gray's Anatomy. Until 1884 there was no free clinic in the state, and then it was solely in eye, ear, nose, and throat. The dissecting-room was the only laboratory in any school.

Unfortunately, my records of this early period were practically destroyed in a fire which visited one of our University buildings some ten or twelve years ago. Among them was a certificate, entitling its holder to practice medicine in Minnesota, signed by all of the nine members of this first faculty, all of whom have passed away.

In 1887 the Legislature again took a hand in medical affairs in the creation of an independent Board of Medical Examiners under the first law of its type, known as the examination law, enacted in the United States. It discarded the diploma as an evidence of medical education. It required an examination of every applicant for license to practice medicine in Minnesota. The speaker was a member of the legislative committee that drafted this law. He mentions this fact

so that you may take the occasion when you undergo the State Board examinations to bless his name.

The law put the first College of Medicine and Surgery out of business and its faculty was dissolved. I think that was the intention. Its secretary, Dr. Millard, who actively promoted this new legislation, had had the foresight and shrewdness to resign before the funeral obsequies occurred. Indeed, other schemes soon to hatch were already incubating in his head.

On February 28, 1888, at his instance, representatives of the faculties of the Minnesota Hospital College and the St. Paul Medical College appeared before the Board of University Regents with a petition that the Board organize a teaching School of Medicine, with the offer to surrender their own charters to that end, and with the tender of their properties, consisting of a college building in each city, for the temporary use of the State. The petition was granted, the offer was accepted and the tender was approved. I do not think any of us knew how consequential a step we had taken. Minnesota had joined the slender group of pioneer institutions which already held the promise of the University education of the physician. Joining this movement a few weeks later, the Minneapolis College of Homeopathic Medicine and Surgery came in. The Minneapolis College of Physicians and Surgeons, later the medical department of Hamline University, remained the only private medical college in the state. The Colleges of Medicine and Surgery, Homeopathic Medicine and Surgery, Dentistry, and Pharmacy were established in the University.

I have here a photograph, which usually adorns my office walls, of the first class which graduated from the Medical School under the auspices of the University. The students stand upon the steps of the little old college building at the corner of Sixth Street and Ninth Avenue South. They number 65, and among them, as an ungallant journal of the day announced, were "two females." The head-dresses of the men, including three stove-pipe hats of ancient build and ten varieties of whiskers, are interesting. I can recognize in the group well-known practitioners who are still in active service; but, unfortunately, no embryo member of the present faculty.

The original—one might call them the charter members of the first faculty of the teaching college—numbered 29, with Dean Perry H. Millard at their head.

Students were then admitted on a high school diploma, or, lacking that, upon a very simple entrance examination. The course covered three years of six months each. The fees were $35 per annum. Dissecting material was an extra and was scarce. There were few microscopes available for any purpose, and for a while there was little purpose for any. The individual courses were short, but instruction was in concentrated solution. It had to be. Gross Anatomy and Materia Medica each enjoyed 128 hours. Why Materia Medica should have been so distinguished only a higher wisdom knows! Physiology had 96 hours; pathology, 32 hours; therapeutics, 15 hours. Bacteriology, embryology, and histology were not taught at all until they came in with Professor Thomas G. Lee some two or three years later. To accommodate them with 86 hours, divided among the three subjects, the session was extended to eight months. Medicine, Surgery, and Obstetrics were pretty nearly the whole thing. Eye, ear, nose, and throat was an infant in arms. Pediatrics was unborn.

Until 1893 we kept school in the little building across the river, under the wing of St. Barnabas' Hospital. Then the Legislature authorized our removal to the Campus, and Dean Millard advanced the money to build the first Millard Hall, now occupied by the College of Pharmacy. A little later came the little "bowling-alley," now housing the general storehouse, but then accommodating crowded classes in chemistry, histology, pathology, bacteriology, and pharmacy.

It was the occasion of great concern when the Medical College was removed. The Academics were practically the entire University of that day, and the invasion of the Campus by the Medics was like the alarum of the barbarians at the gates of Rome. They were literally afraid of us and, perhaps, not altogether without occasion, for the Medics of the period,—hard-working, ambitious, critical as ever,—were a rough lot. To "pass up" a student over the amphitheater benches was a common pastime, and, if discovered by the entry of a professor, they were not in the least abashed; to conceal animals, large or small, dead or alive, in the reading-desk or under the seats; to mix the chemical solutions so that the reactions would not work, to introduce a "stiff" into a faculty meeting—these were quite ordinary pranks. If a lecture was liked, it was always applauded. Silence greeted the unappreciated, and those who were in disfavor might meet empty benches or be treated to a small riot. But, nevertheless, those were the times in which the pet names of some of your professors were

coined, and when personal contact between student and teacher was more common than it is today. And then, after all, the medical student body soon achieved an amelioration of class manners—an improvement to be traced, I believe, not so much to Campus associations as to the admission of women to the School. It is true that an outbreak of the primitive still occurred once in a while for several years.

The University influence, however, soon showed itself in the matter of scholarship requirements. The course was extended, in 1894, to four years.

The newly acquired buildings were shared with the associated Colleges of Homeopathy, Dentistry, and Pharmacy; and the consequent crowding of them led, in 1895, to the addition of the Medical Science building, now occupied by the College of Dentistry. To this the Departments of Histology, Pathology, Bacteriology, and Physiology were transferred, together with the College of Pharmacy, leaving the little "bowling-alley" to dear old Charlie Bell, "odd as Dick's hat-band," and his beloved chemistry.

The teaching of the fundamental sciences for all the associated colleges was centered in the Medical School, an arrangement which has always seemed to work well.

The following year (1896), came to the Campus, as professor of pathology and bacteriology, a Prince among Men,—one molded to play a large part in the destinies of the School,—the late lamented Frank Fairchild Wesbrook, at the time of his death, President of the University of British Columbia. A lover of his adopted country, as he was of his native Canada; proud of his British ancestry; devoted to his science, to the profession of medicine, to the University and to the School, his broad vision, strong leadership, sterling integrity, and remarkable team-playing qualities won for him the respect and coöperation of his fellows. The students of to-day owe much that they cannot measure to this man, whom they did not know, for the position their School has held in the front rank of the teaching institutions of medicine in America.

The thought of him reminds us of another loss that the School suffered at about this time. Early in 1897 Dr. Perry H. Millard, the first Dean of the Medical School, died. The School was fathered by him. In his brain the College of Medicine and Surgery of this University first took shape. By nature he was an initiator, an organizer. He had a vision, if sometimes he could but imperfectly realize it. Crude in his processes, he hammered his way to the achievement of his usually good purposes with an indomitable energy, the undue expenditure of which brought him to an early grave. A memorial tablet in the new Millard Hall testifies to his service.

He was succeeded by Dr. Parks Ritchie, Professor of Obstetrics, who held the Deanship for nine years. He was a man whom we all loved; of genial nature, keen humor, natural wit, and faithful to the very core of him.

In 1898 the first offer of the seven-year course, leading to the joint degrees of B. A. and M. D., was announced. It was a tooth-pulling process, unrelieved by local anesthetics, to get the Academics even to admit that a year in medicine might be equivalent to a year in Arts.

In the following year, the entrance qualifications to the School were made identical with those of the University at large. The impetus to higher standards of scholarship steadily gained force. In 1901-2, the annual session was again extended and to nine months. In 1903-4 the six-year course, leading to the degrees of B. S. and M. D., was offered to the student's option. I remember how greatly my faith in the desire of the medical student to get the best education offered to him was encouraged by the fact that long before the six years' course was made compulsory practically the entire student body was taking it of choice. In fact, it was finally made compulsory in 1908, only to gather in a small unambitious residue and to keep the School, in name as in fact, in the select company of the best institutions of the country. The required subjects of the pre-medical courses were then definitely outlined.

In December, 1905, the most signal of events since the birth of the College occurred in the announcement that Mr. Walter J. Trask, executor of the estate of Dr. and Mrs. A. F. Elliot, had devoted $113,000 to the establishment of the Elliot Memorial Hospital. It is painful to have to add that for the five succeeding years, hope deferred by a succession of delays in the use of this substantial gift made our hearts sick.

In 1906-7 the Legislature provided for the building of the Institute of Public Health and Pathology, which the School, after several years of fruitful occupancy, has recently surrendered to other uses than its own, the old Millard Hall going, earlier, to the College of Pharmacy and the Medical Science building to the College of Dentistry.

In the same year Dr. Wesbrook, chief of the Department of Pathology, Bacteriology, and

Public Health, was appointed Dean of the Medical School in succession to Dr. Parks Ritchie, resigned. To Dean Wesbrook's significant service to the State I have already referred. It cannot be too often or too gratefully acknowledged.

On the 11th day of February, 1908, negotiations were opened by the Medical Department of Hamline University for its adoption by the University of Minnesota. With their early completion, the last private medical college of the State ceased to be, and the unification of medical teaching in the University of Minnesota was achieved. It was a notable event and was fitly celebrated at the time by the recital and publication of the history of medical education in the State. For Minnesota the day of University education in medicine had fully dawned.

The School was reorganized departmentally at this time, and its business affairs were entrusted to an executive faculty, now called the Administrative Board.

At the same date history records the decease of the College of Homeopathic Medicine and Surgery. Its death was one of slow disintegration, and there was not much left to bury when the end came. From a peak-load of sixteen students in all classes it had diminished to one senior, two juniors, and no sophomores or freshmen. The Board of Regents concluded, in the year 1909, as they might have known long before, that fundamentally there was only one science of medicine; but, in order to prove it to the satisfaction of the public, they created two Chairs, the one of homeopathic materia medica, or the study of drugs under different names, and the other of homeopathic therapeutics, or the study of drugs under different doses. The professors in the two Chairs were paid $2,000 each for one year. They earned it. Day by day, throughout that year, they came and sat in those Chairs for the assigned hour, in which no student ever appeared! At the end of the year the Board decided that the Chairs in which homeopathy had sat might as well go, as the College had gone, into the place of Shades.

In 1909 not death, fortunately, but birth is to be recorded:

First, the actual birth of the University Hospitals, housed pending the long delay in placing and erecting the Elliot Memorial, in three and, later, four, and five of the dwellings on the old Campus. There we tried out the hospitalization of the Medical School, and it was a very interesting and an altogether profitable experience.

Second, the first University School of Nursing established anywhere in the world, was organized. It has not only justified the standards it initially set, but it has proved the pathfinder for six other University Schools in the United States. It was placed, first, in charge of Miss Bertha Erdmann, and, later, of Miss Louise M. Powell, who still directs the School. One and the same standing committee of the Administrative Board has held up her hands until now. How interesting its sisterhood has been to the medical student body is attested by the matrimonial register of the School of Nursing.

Three fires endangered the Medical School within successive short periods of time. Following one of these an outstanding wall on the burned upper floor of Millard Hall was caught in a high wind and came down upon the amphitheater, burying Dr. J. E. Moore, who was lecturing to the senior class. He was taken out alive, carried to the temporary hospital, and survived for several years of usefulness, but with effects of the injury which he never fully overcame.

In September, 1911, the Elliot Memorial Hospital was at last finished and opened to patients and students. When finally built and equipped, accumulated interest had brought the original gift up to $120,000; interested citizens had subscribed $42,000 for the purchase of land, and the State had added $83,000 to the building and equipment fund. At its formal opening the Medical School was duly congratulated upon its achievement of a teaching laboratory of clinical medicine upon the Campus. It was a very great achievement, but what I had occasion to say then I would repeat now: The promise of that day will not have been fulfilled until the extension of the University Hospital system, for which we have worked and waited, hoped and prayed, these ten years since, shall have added the full quota of hospital beds necessary to supply the entire clinical needs of the School. For that consummation every alumnus and every student of the School should work in season and out of season.

We should not pass by this epochal event without pausing to record the generous hospitality which the School had enjoyed in the public and private hospitals of the Twin Cities. In the days when no free clinics were established, when clinical material was the daily bread for which the student had to pray and then beg, the freedom given to us by these hospitals was a great boon. The City Hospital of Minneapolis and the City and County Hospital of St. Paul, the courtesies of which we still enjoy, the Asbury Methodist

Hospital, the Swedish Hospital, the Norwegian Lutheran, the Northwestern Hospital, St. Barnabas', St. Luke's, St. Joseph's, and St. Mary's hospitals served us freely in those days of need.

In the meantime the progress of the School toward better housing and the larger opportunity which better housing brings, had been great. The Legislatures of the two preceding biennia had appropriated the total sum of $326,400 for the building of the new Millard Hall and the sum of $310,000 for that of the Institute of Anatomy. Careful survey of other institutions in the country was made before these buildings were planned, and it is probable that they stood, at the date of their completion, for the last word in medical-school construction of the time.

They were occupied in 1912, and, for the first time in its history, the Medical School found itself with the modern mechanisms of teaching in all the fundamental branches and with room enough to work in and to grow in. The Institute of Public Health and Pathology retained for some years following, had already set something of the type of laboratory construction to be desired.

In the year 1912 the degree of Bachelor of Science or Bachelor of Arts became the statutory evidence of the two or more years of required academic work. Very notably has the scholarship quality of the entering student body improved with the succeeding years.

In the same year the so-called "reorganization of the Medical School" was undertaken. Its announced purpose was to diminish the size of the Faculty. It involved the retirement of men who had given long and valuable service to the University and had served, in many instances, without salary. It included readjustments of position of undoubted merit in certain cases. That its primary stated purpose was a mistaken one is shown by the fact that within three years the original numbers of the faculty had been regained by new appointments, and that at the present time the Faculty is larger than it was before the re-organization was effected.

No constructive effort,—and I have no doubt of the constructive intention which inspired that effort,—ever worked for any school the dire destruction of fraternal feeling, of University spirit, of school loyalty, of successful autonomy, of team-playing coöperation which this event involved. Slowly and painfully the School has passed through the succeeding years of convalescence toward the hope of recovery, and it is still convalescent.

This unfortunate experience was immediately followed by the resignation of Dean Wesbrook, an event which marks the coming in of the period, theoretically termed for the uses of this occasion "the present of the Medical School."*

Misfortune had piled itself upon misfortune, for Dr. Wesbrook's resignation was accepted. Going to higher place and larger opportunity, nevertheless he left the school he had so greatly led with a sorrowful heart.

The influence of his work in laying a broad rational foundation for the development of the Medical School deserves all the emphasis that can be given to it. His power consisted not alone in his genial personality and his whole-hearted enthusiasm for the tasks he had in hand; it lay yet more in his clear vision of the essential elements which must characterize the great medical schools of the future.

His attention was not primarily directed toward the operation of our small University Hospital. He foresaw a hospital of a thousand beds, in which all classes of disease conditions could be treated and studied, and for such a hospital group he was constantly planning. To him the comparatively few medical students of the present only represented a promise of future numbers. He saw the Medical School swarming with candidates for undergraduate and postgraduate degrees—students who would be drawn from the entire Northwest, and for whose accommodation proper facilities must be planned far in advance of the actual need. His mind foresaw a great institute of hygiene and public health, where future health officers should receive their training and where technical aid might be provided for all sorts of municipal and state problems. A vast medical library as a center for the medical culture of this part of the world was clearly projected. But, more than all else, he recognized the necessity for the unity of the medical profession. The doctors of the state were his advisors and counselors, and he sought by every legitimate effort to bring together and keep together that large body of the medical profession upon whose active support he was convinced the success of his plans would ultimately depend.

Increased wealth of clinical material, a constantly augmented student body, a monumental contribution to the science of preventive medicine, an adequate library, and a coöperative body of alumni—these were the ideals which he ever held before us and which he believed would help to make this medical school a world-wide force in medical education.

In June, 1913, the Administrative Board nominated to the President for the vacant Deanship, Dr. Charles Lyman Greene; but the program for the development of the Medical School upon which Dr. Greene conditioned his acceptance proved unacceptable to the Administration and he declined the nomination. At a special meeting of the Board Dr. Elias P. Lyon, the present incumbent, was nominated to the office and appointed by the Board of Regents. He entered upon his duties in September, 1913, and had before him a very difficult task.

*The paragraphs following and set in small type, which serve to bring the history of the Medical School up to the present time, have been prepared, in collaboration, by Drs. H. E. Robertson and R. O. Beard.

In 1914 the establishment of a School of Public Health was proposed by the Faculty, but, unfortunately, the plan was rejected.

Early in that year Dr. Frank C. Todd first submitted proposals for the creation of Teaching Fellowships and for the organization of a Graduate School in Medicine in association with the Medical School. The plan was adopted and approved by the Board of Regents. The fellowships, in limited number, were created, but the medical graduate school was subsequently transferred to the main graduate school.

The elective system was introduced into the curriculum of the school and assigned a specified number of hours.

The extension of the University Hospital System, first submitted to the Board of Regents in 1913, was definitely outlined in April, 1914, and again submitted to the Board of Regents. It was approved in principle. It has been resubmitted upon five several occasions since. It was finally incorporated in the building program of 1919, in practically original form, and was so presented to the Legislature. The funds to carry out the program were provided, but the school still awaits the consummation of an adequate clinic, for which it has so long and so devoutly wished.

In the year 1914, history records the loss of Dr. J. Clark Stewart, who had faithfully served the school from its birth. A bronze tablet to his memory has been placed in Millard Hall by the Alumni.

In October, 1914, a committee was appointed by the Administrative Board to consider the possible relationship of the Mayo Clinic to the Medical School. Objections arising to an affiliation with the Mayo Clinic, the Doctors William J. and Charles H. Mayo established the Mayo Foundation for the Promotion of Medical Education and Research with an endowment which has now reached the sum of nearly two million dollars. After a long and disquieting controversy, resolutions were finally adopted by the Faculty in March, 1915, which approved an affiliation between the Medical School and the Mayo Foundation. By action of the Board of Regents the affiliation was effected, but with the Graduate School, instead of the Medical School. Some two years later, this temporary affiliation was replaced by a permanent union with the immediate transfer to the University of the endowment fund for the support of the Foundation.

The gift was a generous, nay, a princely, one. The foundation is, in itself, a magnificent conception. Its potentialities for good in the service of the public and in the promotion of medical education are unmeasured. But it remains a matter for the keenest regret that by reason of influences we cannot analyze, nor even comprehend, this great good should have been secured at so sad a sacrifice of some of the best teaching ability in the Faculty and at the cost of so much of the good-will of the Alumni and of the profession of the state.

During the year 1915, the Out-patient Department of the University Hospital was removed from the old Dispensary building at Seven Corners, to the basement of Millard Hall, where, again congested by too limited space, it awaits the provision of more commodious quarters. In the same year a Social Service Department was added to the system of dispensary clinics, and has, with the aid of the staff, served to modernize the service.

From the years 1915 to 1918, there is written a melancholy record of death. Dr. Abraham B Cates, Dr. Charles A. Wheaton, and Dr. James E. Moore, veterans of the original Faculty and fit types of the faithful in the service of medicine, in turn passed on. Dr. Frank C. Todd died in the war service of his country, and left a large vacancy in the teaching and administrative staff of the school. He testified to his deep interest in its progress by the suggestion to his widow of a partial endowment of a Clinic in Ophthalmology and Oto-Laryngology under conditions awaiting fulfillment by the University.

Following upon the tale of these losses came the tidings of the death of the school's former Dean, Doctor Wesbrook, a death precipitated by his unsparing devotion to the interests of the Dominion of Canada in the Great War.

There stands upon the Minutes of the Faculty a Memorial which may fitly find place in such a history of the making of the school as this.

MEMORIAL TO FRANK FAIRCHILD WESBROOK,
M. A., C. M., M. D.,
DEAN OF THE MEDICAL SCHOOL OF THE
UNIVERSITY OF MINNESOTA
1906-1913

> The Medical School of the University of Minnesota receives with profound sorrow the tidings of the death of its former Dean, Frank Fairchild Wesbrook.
>
> The men and women of the Faculty who worked with him and knew him intimately for many years know that "A Master in Israel has fallen." They know that a scientist in medicine who ranked among the marked men of his day is gone. But they know, too, that a leader whom they gladly followed, an administrator who directed with intelligent power the destinies of the school, a counselor in whom they trusted, a friend of golden days gone by whom they loved, has passed into the Great Beyond. His going reminds them of the strong man he was, of the great work he did, of the worth of his friendship and the joy of his companionship, which, again, with renewed consciousness of loss, they lose.
>
> With the death of their old chief, a significant chapter in the history of the Medical School of Minnesota is closed.

From the spring of 1917, to the winter of 1918, the history of the Medical School was the history of the whole University, as of all other major institutions of the country during the World War—a history of the devotion of all its interests to the welfare of the nation. Its Faculty was depleted to the extent of forty per cent of the staff, enlisted in various branches of the service. Upon the remainder devolved the task of sustaining the school and doing civilian duty on occasion. And the task was the heavier because the medical students were wisely

exempted from the draft, and enrolled, first, in the Medical Reserve Corps and later in the Students' Army Training Corps, and were thus kept in training. It was one of the highest tests of the patriotism of men that they should be content to do the duty and to stay in the place to which the Government called them. The organization of the University Base Hospital No. 26, upon the initiation and partial support of the Doctors Mayo, seconded by other public-spirited men and women, was an especially notable contribution of service by medical staff and students alike. The unit won an enviable record in France, and in the end the University was the gainer by the gift of its men to an experience in this and other fields of professional war-work as valuable as it was publicly esteemed.

In the emergency of the Northern Minnesota forest fires of 1918, members of the staff and student body volunteered for service under the Adjutant General of the state.

Out of the demand of the war for a speeding-up of the output of the medical colleges of the country, grew the institution of the four-quarter system to which the School has since adhered.

In the summer of 1919, the departments of Pathology and Public Health and of Bacteriology and Immunology were removed to the Institute of Anatomy and Millard Hall, respectively, surrendering to other University uses the Institute of Public Health and Pathology. The transfer of these departments has seriously crowded the new buildings in which the school had hoped and planned to have sufficient opportunity to grow.

In 1919-20, an innovation in medical teaching was experimentally introduced by way of the "Student Internship," under which students are assigned to approved hospitals for the last six months of their four years' course. On account of the scarcity of available hospital positions this Junior Internship has been changed, within the year, from a required to an elective course.

As a result of budget embarrassments and as a test of other means of hospital support, the Board of Regents has recently placed fifty of the too few hospital beds upon a per-diem basis.

Events, whether they mark success or failure, gain or loss, progress or recession, and particularly events which take shape in stone and brick and mortar, do not tell the whole history of this School, or of any other human undertaking.

The University is best storied, as I have tried to story it, in the terms of men. Not buildings, nor equipment, nor libraries, necessary as they are, but its teachers set the type and fashion of the school. To the men who made the Medical School in its earlier years, who fostered its infancy, who nurtured its youth, who inspired its counsels, we stand indebted. Some of them have passed over the Great Divide. The muster-roll of them is pitifully long for the length of the life of the School. Men of parts and of failings, of power and of weakness, of noble purpose and of more or less imperfect achievement, as we all are, the names of Abbott (E. J.), Boardman, Cates, Dunn, Burnside Foster, Goodrich, Hendricks, Hunter, Laton, Little, Millard, Wesbrook, Moore, Ritchie, Senkler, Spencer, Clark Stewart, Stone, Todd, Wells, and Wheaton stand in our memory among "the immortal dead who live again in minds made better for their presence." We do them reverence!

And then, there are other men, living but lost to our service, for one reason or another, among whom are many whom we have good cause to remember. Serving the school, for the most part without money and without price, the appreciation of the University has never gone out adequately to these. To such men as Abbott (A. W.), Allport, Bell, Cross, Dennis, Dunsmoor, Fulton, Greene, Hare, Head, Hynes, Jones (W. A.), Nippert, Nootnagle, Roberts, Rees, Riggs, Senkler, Sheldon, and Staples, and yet others, it is a pleasure to acknowledge and to record our debt of gratitude.

Of men and women still in the service it is perhaps not becoming that we should individually speak, even in the past tense. They are "carrying on,"—these of the past and of the present,—a work which they bravely bore through the heavy burden and heat of those earlier days.

But it is not in these of the Faculty alone, living or dead, serving or having served, that the intrinsic greatness of the School lies, that its real reputation rests. It is in the notable body of the alumni of the School.

There are 1,408 Alumni on the roster of the Medical School up to the present date. Ninety-six of these are now engaged in teaching on the faculty staff. Some forty others have contributed faculty service in the past.

Alas! that I cannot tell you the names of those—and many they are—who have lived well and died honored by those to whom they have ministered. I could wish that our records of them were more complete. We all know of men and women who, graduating from this School, have reflected honor through their achievements upon their Alma Mater, but it would be invidious to mention some and inevitably miss many. I know well that there are many more, unwritten in medical literature, who have made no name for themselves otherwise than in the homes they have served, in the lives they have saved, and the health they have restored; who are unremembered save by "the truth that they have taught, the beauty they have wrought, the comfort they have been."

Appreciating the privilege of speaking to you of a past of which we do well to be proud, I think that Dr. Robertson is to be envied his share of our joint task; for, after all, *it is only the present that counts.* Said one of our number the other day, "It is of the future of the Medical School that I would like to hear," but it is fitting that we should be more concerned about the present. The future will be only what we of the present day and of each succeeding present day make it. Tomorrow forever waits upon today.

> Time past is gone—thou canst not it recall;
> Time present is—employ the portion small;
> Time future is not and may never be:
> Time present is the only time for thee.

That is, perhaps, more truth than poetry, but it is very real truth.

In closing you will permit me a personal word to you, the present students of the School. The School, in major measure, is in your hands to make it what it ought to be, to make it what it can be,—nay, what it cannot help but be,—if you will that it shall be. Remember that "He does not read history aright who imagines that what was done by other men in remote ages has any greater significance than what he is doing today." You are the inheritors of much. The past is funded into the present. The future depends largely upon what you, men and women, are doing now. It depends very greatly upon the essential honesty, the essential earnestness of your work and purpose. The standards of the School, set in the past by honest, earnest men and women—teachers and students alike—are yours to maintain or to uplift. I know you will wish to maintain them after you have graduated; for the alumnus always gets a new sense of the value of his School after he leaves it and is always jealous of its renown. But you must maintain these standards now, and they are only to be maintained by the quality of the work you require of yourselves and of your fellows.

Genuine satisfaction in your successes—and you will achieve them; a saving regret over your failures—and you will suffer some of them; a real vision of the possibilities that lie before you—and you will cherish it;—all of these are conditioned upon sincerity. The sentiment of any student group declaring itself for sincerity will safeguard the standards of any School, and the standards of this School are a goodly heritage to guard.

> Only the honest and the earnest man commands all light, all destiny, all fate—
> Nothing with him comes early or too late;
> Our acts our angels are, or good or ill,
> Our fateful shadows that walk by us still.

THE HODGEN SPLINT IN FRACTURES OF THE FEMUR—TECHNIC OF ITS APPLICATION*

By F. E. Clough, M. D.,
Chief Surgeon, Homestake Mining Company
LEAD, SOUTH DAKOTA

Before beginning I desire to call to your attention the fact this is not going to be a war demonstration. I am not going to talk about war splints or the methods used in the war, but will confine myself strictly to a civil-life proposition.

Let me state, first of all, that a fracture of the femur is a very serious lesion, one which causes as much concern to the surgeon whose experience is extensive as to the general practitioner who treats a case only occasionally.

At the Homestake Mining Company's hospital at Lead, for nearly forty years, one method has been used in the majority of simple and compound fractures of the femur, whether the fracture was located at the neck, on any part of the shaft, or involving the knee-joint. Any method which can stand the test of so many years' service must have considerable merit in it. This method consists in the use of the swing devised by Dr. Hodgen of St. Louis, Mo., many years ago. There is nothing to this apparatus or its use for which we can take any credit, but, because its proper application consists of many small details, I am going to explain every step in its installation.

In the first place, the Hodgen swing embraces two main principles,—extension and suspension. Extension may be secured either by a Buck's adhesive plaster or by flannel strips applied with glue. In putting on adhesive plaster, be sure to shave the leg, but, if glue is used, be equally sure not to shave it. The best type of Buck's is made with a three-inch adhesive plaster, split into three

*An adaptation of a stenographic report of a clinical demonstration presented at the annual meeting of the South Dakota State Medical Association at Sioux Falls, S. D., May 21 and 22, 1920.

tails as far as the ankle and applied very carefully to the leg and thigh. Two or three strips of adhesive are then wrapped corkscrew fashion around the leg, and the whole covered with a firm muslin bandage. Be sure to rub the strips smooth and allow them to remain without any pull for a few minutes, in order to become firmly adherent. In order to prevent the strips pressing into the malleoli, place a spreader board about four inches long in the adhesive plaster as it goes around the bottom of the foot. If flannel is used, apply it in the same way with Heussner's or some other glue, which is painted over the hair with an ordinary brush.

(Formula for Heussner's glue (U. S. A. Manual):

Resin	50 parts
Alcohol	50 parts
Benzine (pure)	25 parts
Venice turpentine	5 parts

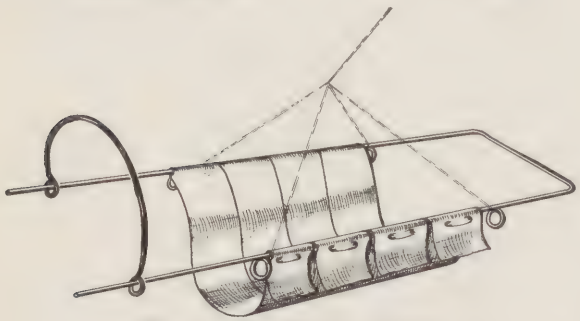


Fig. 1. The Hodgen Swing.

Powder the resin, add half the alcohol and all the benzine and turpentine, and wash out the measure with the remaining alcohol.

How far up the leg should these strips be applied? A mistake too commonly made is in stopping at the knee, so that all the pull comes onto the ligaments of that joint. No matter where the fracture is located in the femur, go at least five inches above the knee, and, if the fracture is higher up, extend the strips to the break.

What does the Hodgen swing look like? It is nothing but an ordinary piece of round iron, five-sixteenths of an inch in diameter. This is bent in a U shape, the bottom piece four and a half inches wide, the side pieces at least as long as the lower extremity. A suspending bridle is now made by two pieces of rope about four feet long, extending from each side rod near the malleoli to the opposite side rod close to the upper end. In order to prevent these ropes slipping along the frame, raise a few sharp points on the iron with a cold chisel, or, better yet, weld four iron eyelets to the side rods. Over the top end of the side rods is slipped on a semicircular iron to spread the frame and prevent pressure against the skin of the thigh. Before applying the splint it is bent in the horizontal plane at the knee joint to an angle of approximately one hundred fifty degrees, which makes the patient more comfortable as well as partially relaxing the hamstring muscles.

Application of the splint:

A cradle is now made of strips of bed-ticking, ranging in width from three to five inches, fastened onto each side of the frame with safety-pins. While supporting the frame with the bridle, these strips are pinned to conform to the contour of the leg and thigh. The cradle should extend from the crotch almost to the ankle, but

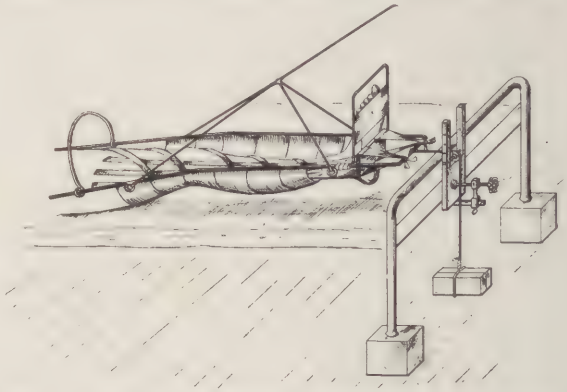


Fig. 2. The Hodgen splint complete, with additional extension attached.

do not put a strip under the tendo Achillis because a pressure-sore develops easily at that point.

How is extension secured with this swing, the real test of a Hodgen splint? First, by placing blocks six inches high under the foot of the bed and thus using the patient's body as a counter-weight.

Second, the loop of the Buck's extension, as it goes around the foot, is securely fastened to the bottom of the frame with two pieces of muslin bandage.

Third, from a ceiling hook placed about eighteen inches beyond the foot of the bed is dropped a pulley rope equipped with a tent-block, which is fastened to the rope bridle of the swing. If the rope is tied to the bridle just above the ankle, much extension is secured, but this location must be figured in each case, so that the upper end of the swing is supported as well as extended. The heel needs to be raised only high enough to swing free from the mattress.

We usually place in the ceiling three hooks, one immediately over the foot of the bed, a second nine inches further out, and a third eighteen inches from the bed, which permits varying degrees of extension to be made. After the first two weeks it is often possible to use the middle hook, and later the one nearest the bed when suspension only is necessary. If it is impracticable to screw in ceiling hooks, some type of overhead trolley frame can be constructed, which must, however, extend some distance beyond the foot of the bed, in order to get an angulated pull. After this is all completed, the patient, of course, having been deeply anesthetized, the ticking strips are again adjusted.

One of the commonest faults of a doctor in handling a fracture anywhere in the lower extremity is the lack of attention given to keep the foot at a right angle with the leg. Even in the Hodgen swing this position cannot be attained unless a right-angled wire foot-piece with a band-

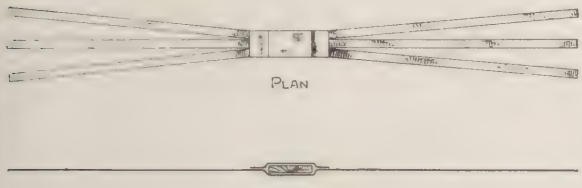


Fig. 3. Buck's extension.

age covering is fastened to the frame, either with adhesive strips or springs, in such a position that the foot is constantly at the desired angle.

The question can be asked if sufficient extension is secured in this way. I should say in the majority of cases, yes, although it is occasionally necessary to augment this by the addition of two or three bricks. This is accomplished by fastening a rope to the bottom of the iron frame, passing it over a pulley or spool attached to the foot of the bed at the level of the swing, with the bricks hanging onto the end of the rope. Care must be taken that the pulley is high enough to prevent the heel dragging down onto the mattress, and thus destroy both suspension and extension. One is constantly impressed with the fact that it is almost impossible to draw out with a direct pull an overriding fracture of the femur in a muscular man, no matter how deeply he may be anesthetized. It is also true that it is frequently possible to line up a fracture after extension has been applied for a week or longer.

If the fracture is compounded and needs dressing, this can be done easily by unpinning one or two strips at a time and applying clean dressings. A mistake that physicians too often make in handling fractures is too frequent change of dressings. It is not necessary to take off all dressings and look at a fracture every time one reports in your office. In this type of dressing one often needs to do nothing but adjust the swings or ropes until the apparatus is discarded.

The next question is, How long do we leave this dressing on? How long does it take a fractured femur in an adult to get well? Why be afraid to tell the patient the truth when first treated? It is a fact, based on cases collected from the service of the leading men of this country, that the average fracture of the femur takes five months to get well. You have probably had cases recover in less time than that, and so have I, for recently one of my cases returned to work after a lay off of three months, which is an exceptional case, however. It has been our plan to keep up an adult six weeks in a case of a fracture of the shaft; if at that time the union is still springy, he is again put in a swing and kept there until the union is practically completed. In fractures of the neck of the femur absolute rest should be maintained for twelve weeks, and, according to one of our foremost surgeons, now dead, at least sixteen weeks. Now, that looks like a long time, but my own opinion is that as many non-unions are due to too early use as to all other causes. In handling a fracture of the neck of the femur with this apparatus, the pull must be in a greatly abducted position, in order to bring closer coaptation of the fragments, as well as truer alignment.

After six or eight weeks of this swing, we formerly allowed these men up on crutches, either with a protecting dressing or none whatever. However, one so frequently sees apparently solid callus melt down under early use that we have adopted the use of the walking Thomas splint for convalescent cases. This is made by taking an ordinary Thomas splint with a padded ring to fit against the pubes and tuber ischii, and cutting off the side rods an inch longer than the lower extremity. By bending the last half inch of the rods inward at a right angle and fitting them into holes in the heel of the shoe, the weight of the body is supported by the side rods instead of by the leg itself. It is essential in applying this apparatus that the side rods be so long that the heel cannot come down to its normal position inside the shoe. We use this Thomas splint until all question of weak union has been eliminated.

One other point is the much mooted question

of massage and early motion of contiguous joints. At present we are going through a rather trying time on the subject, each side claiming to be in the right. It has seemed to me that during the first few weeks these measures are unnecessary, but as soon as union is quite firm then benefit is derived. In the majority of cases, even without massage and motion, the muscles and joints are in good condition by the time active work can be resumed. The war furnished many trained women along this line, but even now the number available is so small that we are practically destitute. So far as I know, nobody has yet been able to prove, in a series of cases, that massage and motion begun at an early period have shortened convalescence at all.

As so few of the patients can sleep or rest during the first few days, we give morphine as needed to keep the patient comfortable, and have yet to see the first case discharged as an addict of the drug.

Finally, may I again impress upon your minds that every fracture, and more especially that of the femur, should be frequently checked up with *x*-ray findings, which not only serve as a means to assist in the proper alignment, but serve as a protector to the doctor against malpractice and other unpleasant complications.

DISCUSSION

Dr. M. M. Grove (Dell Rapids): I think the subject of fractures of the femur has been thoroughly covered by Dr. Clough. Personally, I have had no experience with the Hodgen splint. I have tried about every form of splint on our cases that has been offered the profession, including several ambulatory splints, but none of them have been satisfactory in our hands. We usually resort to a plain Buck's extension with sand-bags after having tried a number of the splints on the market.

I enjoyed Dr. Clough's demonstration very much, and the Hodgen splint, or swing, looks very practical to me. I have wondered if, when the fracture of the femur is three or four inches below the neck, there is any difficulty in retaining the fragments.

Dr. Clough: None at all.

Dr. Grove: The only method, besides a plain Buck's extension, has been the open method of reduction in a number of cases where he have applied the plates, and we have had no difficulty in retaining the fragments.

Dr. O. R. Wright (Huron): I have enjoyed this demonstration of Dr. Clough's very much, although he objects to referring to the Army service and experience in the handling of the graver forms of fractures.

I would like to say a few words in regard to the extension and support of this leg. All these suspended legs are practically on the same plane. Whether you have the Thomas, the Blake, or the Buck's support, the principle is the same. The application of the principle is the thing that makes for success or failure in the handling of the leg.

I tried out this splint a great deal. We had a great quantity of them in the hospital in which I was working, and I saw, while the doctor was demonstrating the splint, the old failure we had in the handling of a great many cases, namely, the splint would not stay in place. It took too much attention. While in place it was all right, but you cannot be straightening up a splint all the time.

Another thing: You have not got a positive amount of extension. You cannot get it because you cannot adjust the pulley at that angle and have a positive amount of extension. You have to test the weight out and determine the coaptation and the condition of the fragments by the *x*-ray in the extension itself if you would get positive results. While we used largely the Thomas splint during the latter part of the war, this sling, or splint, will do the same as the Thomas splint, and the matter of getting adjustment of the fragments and nearly accurate coaptation is oftentimes impossible.

I would like to mention that the fractures we handled were almost all septic. If you put these men on the table after you have done the surgical work that is necessary (I am speaking now of compound fractures), if you put forty pounds of extension over the pulley at the end of the table while finishing it up and looking it over with fluoroscope, you are pulling that out under the anesthetic which you cannot do in any other way, and if you leave the patient an hour in that position and give one-half grain of morphine, by the time the patient is moved to the bed you have got the fragments pretty well in line, which you cannot do by any amount of hand pulling.

In the dorsal decubitus sore, so prevalent in all this work, the use of these spring pads and adhesive plasters, which pull the foot up, is absolutely unnecessary and is a very disagreeable thing. Instead of applying any support at all, something to rest the foot against, such as a small pad, if you pass a bandage around the plantar surface of the foot, fasten it to the head-post of the bed, and order ten minutes' exercise of the foot every two hours, you will never get foot-drop. This was tried on twenty-eight cases. Dorsal decubitus comes from stasis of the circulation brought about by pressure and traction on the leg. It is a circulatory disturbance instead of a position-disturbance, and you can eliminate it in that way. You can get rid of the cramps by simply exercising the foot, which keeps up the circulation of the whole leg, and you get much more rapid and satisfactory growth of bone which is going on.

So far as traction on the knee is concerned, we had a great many of these fractures close to the knee-joint, but I have never seen a relaxed knee-joint from the use of traction. I never saw an ankylosis where we did not get infection in a large series of cases. This splint is practical, but if you line up or properly adjust the fragments the fracture will get well with almost any kind of splint. The patient should be in good condition.

If you run across a fracture of the femur high up near the hip, it will make trouble.

When you begin to get angulation in the first beginning of the formation of callus, then is the time you want to find it out. That can be corrected. I have proven, over and over again, that, when we had a certain amount of angulation and found it while the callus was soft, it is easy by a system of weights to straighten the angulation during the callus-making period. We have straightened the bones that overlap

below the knee joint, brought them into line, and the man had a good walking leg afterward.

Dr. Clough said it takes five months for complete recovery of these cases. I do not know very much about simple fractures, but I have seen 80 per cent of our fracture cases out on canes in four months, particularly those whose fractures were caused by shrapnel. We put them in all kinds of frames and apparatus, and some of them would be moving about in a comparatively short time, and this movement does more for the solidification of the callus than having the leg extended for three months without any use of it.

I want to say another thing to the general practitioners who have these cases of fracture to treat. The Balkan frame can be made at any carpenter's shop, and if there was anything wrong I saw in our orthopedic service in the American army, it was that we were short of decent frames to hang patients on. In the handling of a fracture it is necessary to have a good firm, decent, steady apparatus to which you can attach the thing you desire to use. That is why I objected to the Hodgen splint that has been demonstrated. I prefer a Thomas splint made of three-eighths of an inch iron, well padded, and when I get it on with strips I do not want it to shake around. If you have an upper fracture to deal with, after accurate coaptation of the bones the apparatus should be kept on long enough to enable you to get a good result.

Dr. B. A. Bobb (Mitchell): I am heartily in accord with Dr. Clough's method of support, and I disagree with Dr. Wright on that proposition, for the reason that Dr. Clough has not only demonstrated the value of this splint, but has given us statistics showing that this method of treatment is highly satisfactory. The proposition is this: Dr. Wright has spoken chiefly on fractures from injuries received in the war, while Dr. Clough referred to fractures encountered in civil life. In civil practice the patient is a wage-earner and wants to get out as early as possible after a fracture. We have gotten a lot of patients out early who sustained fractures in industrial plants because the members of their families depended on them. We let them up in six weeks on canes for the simple reason they are wage-earners and must make a living for their families.

Dr. Richard H. Eaton (Ethan): I would like to report the case of a woman, 72 years of age, who fell from a chicken-coop and fractured the right femur about four inches above the knee-joint. The only apparatus I used in her case was the posterior wire splint that could be raised at an angle with some rods. I put on twenty-six pounds of extension. I did not have an *x*-ray of the case. The accident happened out in the country in the middle of the winter, but she got along very well. In about six weeks union was firm, and in eight weeks I took the contrivance off, and she is bearing some weight on the foot. She hesitates a little about using the foot. She is not putting much weight on it, but she is able to get around and sit up in a wheel-chair and does not have any dressing on it now.

I like the posterior splint quite well, because I can pad it with sheet-wadding and look at the leg often. In a woman advanced in years one has to be careful of the skin on account of sores. We had an extra good nurse for her, so that she did not develop any bedsores. I thought she was getting along quite well.

Dr. Clough (closing): Dr. Wright has forced me to comment on the methods in use in the army during the war. It was my good fortune to be closely associated with the fracture work at Camp Grant, which enabled me to see several hundred cases of fractured femurs in various stages of convalescence. As these cases came from all the hospitals overseas, I was given an opportunity to pass judgment on the various methods employed. I still affirm, after this large experience, that we will continue using the Hodgen swing as the most satisfactory method in our practise.

As I mentioned in my remarks, these cases are constantly under *x*-ray supervision. I do not agree with Dr. Wright that they are too much trouble. I have put them up and not touched them for a month. You must recognize I am talking of civil fractures and not of war fractures, which are a different proposition.

The Balkan frame is dying a natural death in this country. It is already dead and buried amongst my friends in the industries I have visited since the war. I have seen only one or two industrial hospitals which have the Balkan frame in use.

I want to impress upon you one thing, namely, that the Hodgen swing is not adapted to every fracture of the femur, neither is the Thomas splint, nor any other method. There are certain cases in which you are at your wit's end to know what to do. There are certain cases in which you have to operate. I stated years ago that it has been our experience in these cases of fractures that 4 per cent of civil fractures was the maximum which needed any open operative work done upon them.

Dr. Wright brought out one very important point, and that is how comforting it is to the patient to move his leg. You can take this and swing the frame around the least bit, and from a state of uncomfortableness you can convert it into complete comfort.

I cannot controvert the gentleman's statement relative to bedsores, for I have never seen one develop where this apparatus was used.

There is an economic side to these cases that must be considered, and just as there are occasionally patients who get out earlier, other patients go on for a long time. It is the average case in civil life, and the statistics we have collected and the statistics collected by Estes, of South Bethlehem, Pa., show that the average length of time in fractures of the femur, covering hundreds of cases, was five and one-third months.

PATHOLOGICAL OBSERVATIONS ON CASES OF ENTOMBMENT*

By Dr. Ludwig Pick
Chief Pathologist of the Third German Army

The knowledge of the pathological anatomy of entombment is a scientific gain from the war. Before the war the clinical and the pathologico-anatomical phenomena of cases of entombment were very little discussed, and only during the war could wide experience be gained. The dug-outs, the tunnels, and the trenches were often caved in, and the soldiers buried under earth, stones, and logs. These accidents often caused the most varied and severe injuries to the body, as severing of the extremities, lacerations of the internal organs, etc. Aside from these destructive traumatisms, certain pathological changes of organs occurred, which were seen with a certain regularity in nearly all cases and which form the basis of a pathological anatomy of entombment.

I want to sketch these changes here in short. They are very remarkable, since they are not understandable simply mechanically and since their discussion is made interesting by this very fact. As pathologist of the Third Army near Rheims I have had occasion to observe a number of cases gross anatomically by post-mortem, later histologically, and I found in many ways my observations coincided with the findings of Ludwig, Frankenthal, and Orth, and also with those of Borst, Wieting, Schminke, Kuettner, and others. Aside from those more common changes already discussed in literature, I saw a very remarkable lesion of the spinal cord in a case of entombment. I shall mention this case again in the course of this discussion.

In most cases of entombment the skin shows excoriations, hemorrhages, pressure and laceration wounds, and in some cases round or oblong blisters. The latter have also been seen by Marx. They are found especially on the skin of the lower extremities, which is indeed the location of choice. These blisters are probably developed (a theory to which Marx agrees) by a mass acting on the epidermis in a tangential direction and moving it against its subcutis.

Especially interesting, however, are the changes in the *muscles,* which are found in practically every case of entombment and which are considered by Frankenthal as characteristic of entombment. They consist of more or less extensive ischemic necroses in the muscles of the extremities, especially of the legs, and also in the muscles of the chest and back. These necroses occur sometimes linearly, sometimes in isolated spots, and sometimes in groups. The substance of the muscle is grayish-yellow, yellowish, or grayish-white to whitish, dry, dull, even simulating fish flesh. The fibers are very prominent and brittle. Variously formed hemorrhages, varying in extent, are observed in these light-colored areas, producing a rather mottled picture adjacent to the red, intact muscle. These muscle changes are found in cases which died one or two days after the entombment, as well as in those which did not come to post-mortem until many days afterward, as in one case on the thirty-eighth day. The larger afferent blood-vessels are always intact. They show no disturbance of continuity, no trauma, and no thrombi. The foci in the muscles which heal with the formation of lumpy scars, explain the very severe muscle pains and sensitiveness on pressure, in some, after entombment. They also explain the common complaints after entombment, which are generally diagnosed as rheumatic.

I have had occasion to examine ischemic muscle necroses histologically at different periods after the accident occurred. Sometimes I found in large areas the whole muscle tissue simply necrotic, inclusive of the interstitium, taking the stain only diffusely. At other times a complete loss of the transverse muscle striation is seen, or dissolution into irregular lumps. Considerable edema of the fiber substance is common. Degeneration of the muscle fiber is followed by a still further decomposition into irregular, very small fragments. Other fibers show hydropic or vacuolar degeneration, having a foamy or spongy appearance. These necrotic muscle fibers and the fragments may be invested by very fine or coarser lime-salt deposits. After the degeneration of the muscle fibers proper, the sarcolemma nuclei may be preserved. They even may be proliferated and arranged in rows. There generally is a number of sarcolemma sheaths, the contents of which have entirely disappeared through absorption. These empty tubes are often densely filled with rather large round or polyhedral elements. They

*Translated and read at the forty-first annual meeting of the Medical Association of Montana, July 9 and 10, by T. C. Witherspoon, M. D., Butte, Montana.

have an abundant protoplasm and a round or oblong nucleus which stains moderately deep. They apparently originate from the proliferated sarcolemma nuclei and surround themselves with undifferentiated sarcoplasma. The wall of the tubes is sometimes formed by a single row of long syncytial spindle cells. These also are derivates of sarcolemma nuclei. In the perimysium (if it is not destroyed by necroses and eventual calcification), hemorrhages, edema, and cellular infiltration, with either spindle-cell fibroblasts or round-cell lymphoid forms, are found. The large cells which were mentioned as lying inside of the tubes are also found sometimes outside of the sarcolemma sheaths. A few times I saw in the necrotic perimysium small vessels thrombosed and with calcification of the vessel wall. Occasionally thin bands of protoplasm are found in the position of the old muscle fibers. They have rounded ends, no transverse striation, and dense, round, lightly stained and large nuclei.

There is no doubt all these various pictures correspond to the process of regeneration following the ischemic necrosis. In the previously mentioned case which came to post-mortem on the thirty-eighth day I found, alongside the necrotic fibers, bands of small young muscle fibers with very many nuclei. Transverse striation was not very distinct, but fine longitudinal striation was easily observed. We see, therefore, on the one hand, the picture of muscle necrosis, including at times the perimysium, and, on the other hand, all stages of muscle regeneration (formation of sarcoblasts up to the formation of practically complete young muscle fibers). Fatty degeneration of muscle tissue was of no import in my cases in comparison to the granular degeneration, which is the prominent histological picture throughout. The material of Frankenthal shows the same condition. The extent of calcification of the necrotic muscle fibers varies greatly. I found it in one case seven days after the accident occurred much more marked than in other cases of five and one-half weeks. In a third case it was completely wanting after six days. How are these muscle necroses produced? In other words, what is the reason for this pathologic change in muscles? There is no doubt that the complete necroses of a whole extremity, as described by Küttner, is caused directly by external pressure, which explains sufficiently the nutritional disturbance. Generally the direct laceration of the muscle tissue in all severe cases will be the cause of the immediate necrosis. However, sometimes these necroses are arranged symmetrically and are present in places where the skin is totally intact and where every indication of a direct contusion is wanting. Frankenthal explains these cases by assuming a temporary pressure or kinking of the vessels, which always causes the formation of thrombi or anatomical damage to the vessel walls, and also the enforced inactivity of the entombed extremity under this circumstance favors the process of necrosis. It seems, though, as if this explanation is not quite satisfactory. Schminke mentions the fact that hemorrhages in muscles are observed far beyond the area of the primarily contused muscle. It is assumed that these lesions are caused sometimes directly by conduction of the contusing force (hydrostatic law of conduction); that is, they are produced purely mechanically. At other times they are produced indirectly by damage to the vessel nerves. Ricker has thought this, and Dietrich has founded this theory very well in his pathology of contusions based on a large pathological experience of war wounds. The vessel nerves are very sensitive to mechanical irritation and even with slight irritation produce a contraction of the small vessels. Severer irritation is followed by dilatation, and very severe irritation by an absolute paralysis of the vessel nerves and stasis in the smaller vessels. As a result of this stasis hemorrhage by diapedesis occurs. The point is that the vasomotor disturbances are conducted more or less beyond the area of contusion. The same phenomenon is observed from penetrating bullet wounds of the extremities without trauma to the vessels and without formation of thrombi; here also ischemic degeneration of muscle substance is found far away from the wound proper. Here also the tissue of the muscle becomes white-yellowish and simulates fish flesh, and sometimes contains small isolated hemorrhages. That these necroses should be called angiospastic, or whether the angiospasm which induces the necrosis originates from a paralysis of the antagonists (the dilators) is a question. However, since the larger vessels are free from thrombi and without anatomical changes, and since the eventual thrombosis and calcification in the smaller and very small vessels of the necrotic area are undoubtedly related to the retrogressive changes in the muscle fibers, there is hardly any other explanation. The various hemorrhages in the areas of degeneration are purely of a vasomotor nature, that is, by diapedesis on account of the vasomotor paralysis with stasis.

I shall mention next the changes in the *central nervous system.* Here epidural, subdural, and

pial hemorrhages are found even in the absence of trauma of the skull or the vertebræ; also hemorrhagic destruction and small capillary hemorrhages in the central nervous substance proper. These hemorrhages, I think, are explainable by the force of the general contusion which causes continuity disturbances of the very fine blood-vessels in the skull and the spinal canal, exactly as in cases of severe injuries from falls. I have observed, as mentioned before, a very peculiar anatomical change in the spinal column. It is of a circumscribed nature, and its genetic explanation is quite difficult. I shall report the observation in short.

A young infantry soldier was brought to the Field Hospital with paralysis of both legs, and urine and stool retention. The reflexes of the lower extremities, of the abdominal skin and of the cremaster, could not be elicited. The whole area was absolutely anesthetic. There was no evidence of trauma to or sensitiveness on pressure of the spine; nevertheless a transverse lesion of the spinal cord was apparent. Nine days afterward the man was sent to another large hospital, and it was found there that the skin in the paralyzed area showed a pronounced trophic vasomotor change. Excoriations, edema, multiple decubitus, black-bluish discolorations of the skin, were present even in places which were not exposed to pressure, as, for example, on the soles of his feet. Repeated *x*-ray examinations of the spinal column did not show any pathological changes, like fracture or luxation. In consideration of his desperate condition a laminectomy was decided upon possibly to remove a small splinter. After removal of the posterior arcs of the first, second, and third dorsal vertebræ no trace of a trauma could be found, no hemorrhage outside or inside of the dura and only a very small spot half-pea size on the pia below the second dorsal vertebra showed a slight reddening. The man stood the operation well, the wound healed per primum, but he died on the thirty-eighth day after the accident. The post-mortem showed multiple decubitus, an encapsulated empyema of the right pleura, purulent bronchitis with hypostatic pneumonia, acute cystopyelitis and nephritis, and ischemic necrosis of the left calf muscles. The spinal column showed, below the first and second dorsal vertebræ, a white, complete softening free from hemorrhage and pigmentation. On microscopic examination this particular part contained fat globules in abundance. The coverings of the spinal column were without changes, especially without hemorrhages or pigmentations; and this was also true of the brain and its coverings. It is apparent that the localized destruction of the spinal cord must have been caused by a local factor. I thought first that perhaps a violent shock of the spinal column had produced a momentary luxation of one or two vertebræ with immediate replacement and had smashed the underlying spinal cord, but close examination of the fibrocartilages and of the joints and the tendons of this part did not demonstrate any evidence of trauma; neither was there laceration, hemorrhage, pigmentation, etc. It is not to be considered that an impact on this part of the spine could have been conducted to the corresponding sections of the spinal cord, and so produced a severe contusion of the spinal cord, resulting in final softening. The complete absence of hemorrhage or pigmentation in the softened parts, as well as in the corresponding section of the spine, does not bear out this assumption. We have, therefore, to think, also, in this case of regional angiospasm caused by an impact or a stroke on the upper dorsal vertebræ; an anemia of even short duration must have damaged the very sensitive nerve substance to the point of necrosis.

In the *organs of the pleural cavity* atelectasis of the lung may be caused by a persistent compression of the thorax. In the *organs of the peritoneal cavity* laceration of the intestines, severing of intestines from the mesentery, and rupture of the liver and of the spleen are observed. The pathological anatomy of the spleen is especially interesting in those cases of entombment which came to post-mortem some time after the accident occurred. The spleen suffers rupture, as does the liver, on its convexity through maximal flexion of the organ. These ruptures may be very small and very numerous, and through the discontinuity of the serosa button-shaped prolapses of the pulp occur. If these prolapses are close together they touch at their sides and form, after the endothelial covering from the serosa is completely regenerated so that it covers all denuded surfaces, small transparent cysts of various sizes. The number of these cysts is sometimes very considerable, and their presence might be of value as indicative of the fact that the patient had been entombed. The traumatic origin of the cysts has been previously defended in literature by Beneke and Randohr. This has been directly proven by the positive findings on men subjected to these crushing injuries.

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THE STRANGE CASE OF MIRIAM RUBIN

Newspaper reports of the condition of the "talking girl" of Waukegan, Illinois, and the chiropractic bunk that surrounded her mysterious and much-advertised system of articulation, have been brought down to earth. We do not mean to say that the little girl has died, but we are able to determine a little more definitely what her condition was and what led up to the newspaper notoriety. The investigation of the case was undertaken by the *Journal of the American Medical Association,* which sent a representative to Waukegan, who learned the details of Miriam's disease.

The girl is a normal child of eight years of age, of average size, and slightly above the average in intelligence. In 1919 she suffered from an influenza, from which she seemingly recovered. In the spring of 1920 she had a moderate attack of measles, from which she recovered. On February 3 and 4, 1921, she complained of pain in her arms, hands, and legs: and on February 5 she began talking rapidly, and this was practically continuous. The child chattered on, day and night, according to the mother's report. The family physician was called in on February 6. He found her body was in constant motion from side to side, the arms and legs twitching spasmodically and irregularly. There was no evidence of any stiffening of the muscles of the back or neck, nor was there any sensitiveness over the spine or the vertebræ. She had a temperature ranging from 100° to 102.2.° She went through the usual course of an illness which was finally diagnosticated as encephalitis,—probably a hang-over from her old influenza. She was seen by Dr. Abt, of Chicago, on February 12, and again on February 21. On the latter visit Dr. Abt found a delirium present. She was emaciated, her general condition was bad, the right pupil was larger than the left, and the right eye turned in and upward, and the neck was slightly rigid. There was some disorder of her respiration and her heart varied in intensity of beats,—sometimes as high as 140. About the 12th of February,—that is, eight days after the child began to show symptoms of encephalitis,—a chiropractor was called in. After his call it was claimed that she had short intervals of rest. At the time she had her treatment her temperature was 101.4.° It must have been about this time that the advertisements in the newspapers began to appear, not only in Chicago, but in other places, and only a few days ago, in a Minneapolis paper, a full-page announcement was headed "The Instantaneous Recovery of Miriam Rubin," while, as a matter of fact, on the last day of February the case was still diagnosed as epidemic encephalitis, and instead of the newspaper's "sleeping sickness," the disease became newspaper's "talking sickness." One paper went so far as to state that the chiropractor told the family that the nerve of speech had been caught between the vertebræ, and was thus so irritated that the child was constantly talking. Of course, anyone who knows anatomy at all,—and it cannot be granted that the chiropractor knows anatomy,—is fully aware of the fact that the center of speech is in the left frontoparietal region of the brain and that the cranial nerves which arise from that center do not pass through or in the vicinity of the spinal cord, so that they are not in any way, directly or indirectly, associated with the spinal column,—hence the falsity of the statement and the deplorable lack of anatomical knowledge on the part of the chiropractor.

The gratuitous and paid advertising which has been circulated over this part of the country has left a very bad impression on the people. But, from the suggestions of the editorials in the *Journal of the American Medical Association,* the newspapers have not seen fit to explain the facts in the case and have not retracted in any way the statements they have made about this case, consequently the impression is left with the public that this girl was cured instantly by a chiropractor. The newspapers do not state, either, that this chiropractor was dismissed from

the case on or about the 23d of February because his treatment was very painful, the patient resenting it, and on account of her emaciated condition and her febrile state it was thought unwise. The attending physician has given a dubious prognosis.

The recital of her symptoms indicates that she had an organic brain lesion.

This case presents one of the problems that medical societies and legislative bodies are responsible for. The medical men have grown tired of advocating and defending laws pertaining to normal medical practice, and they have thrown upon the legislature the responsibility for the enactment of laws upholding the false practitioner, the quack, and the man who thinks he has discovered something new which will cure in short order. The legislator is a human being, and he is just as easily swayed by an advertisement of this chiropractic type as is his neighbor, the mother of a sick child. Fortunately, there have been enough enlightened heads at least in the Minnesota legislature this year to prevent the enactment of what is known as the osteopathic-surgical bill, which has been thoroughly and definitely killed. But even this does not prevent either the osteopath from practicing medicine outside of his specialty or the chiropractor from dipping into things of which he knows nothing.

The efforts of physicians and educators to inform people as to what is necessary for the benefit of their health are not infrequently entirely disregarded by the public, and the quacks who have something new to offer, and can buy newspaper space, will find favor with the masses. No one knows how much harm they may do. We only hear of the cures that they profess to have made. Very few appreciate the benefit that the doctor leaves behind. And yet he is not claiming credit for the cure of illness; he is simply engaged in the practice of medicine under the normal practice act, and probably will continue to do so until all others are either exterminated or until they override him and crush him to earth.

"THE PAST OF THE MEDICAL SCHOOL OF THE UNIVERITY OF MINNESOTA"

The Medical Six O'Clock Club is a student organization at the University of Minnesota, to the meetings of which the faculty is invited. That it is a hopeful inspirer of University spirit is indicated by the desire of its members to become acquainted with the history of the school to which they belong. The fulfillment of that desire will be found in the address presented, by request of the Club, at its mid-year banquet, by Dr. Richard Olding Beard, the last remaining active member of the original faculty of the School. This address appears on another page of this issue of THE JOURNAL-LANCET.

At the conclusion of his address Dr. Beard received an ovation from the students and members of the faculty present, which testified to their appreciation at once of his immediate effort and of the long years of service he has rendered to the Medical School.

Dr. H. E. Robertson followed with an extemporaneous address, in which he discussed in a telling way the conditions which have determined the present status of the Medical School. It is to be regretted that this is not available in form for publication. In the introduction to his theme, Dr. Robertson paid a glowing tribute to Dr. Beard and to the late Dean Wesbrook, as in large measure contributors to the making of the Medical School.

THE DOCTOR AND HIS CLIENTELE

At a recent conference on medical education at the University of Minnesota, President Ray Lyman Wilbur, of Leland Stanford University, gave some counsel to the embryo physicians of his audience which might well be appreciated by those who are fledged and flown from the schools.

He urged their differentiation of the classes of the people with whom they have to deal by the measure of the knowledge they possess of the modern science of health and disease. He suggested their recognition of a small group of the super-intelligent of whom the profession might well beware lest they come to possess a higher knowledge of the conditions of human health than the doctors themselves. He spoke of the changed and changing relation which the physician bears to the great mass of his clientele, intelligent enough to deserve teaching and fit to be taken frankly into his confidence. He admitted the still prevailing ignorance of the many who have to be borne up on their faith in the doctor and toward whom he still exercises a paternal relation; and then, finally, he referred to the hopeless and helpless residue possessed only of "the patent medicine mind," victimized by their own crudity and credulity and by the commercialism of the vendor of doubtful nostrums for the relief of their ever-present and

dope-cultivated ills. Legislative control of this commercialism remains probably the only protection of these people from themselves.

We have not attempted to quote President Wilbur closely, but have caught, or tried to catch, a spark of the inspiration of this man, who, as physician, medical educator, and university president, has a rare personality, a keen philosophy, and a composite educative skill. The university and the medical school are fortunate, indeed, which possess so powerful a leader.

THE NEW NEW YORK MEDICAL JOURNAL

The New York Medical Journal, which absorbed *The Medical News* of Philadelphia in 1905 and *The Philadelphia Medical Journal* in 1903, has become a semimonthly under the able management of the A. R. Elliott Publishing Company. As the *News* was founded in 1843, the new semimonthly has a venerable history. It presents a very attractive exterior and furnishes a very interesting body of reading matter.

This number of the new publication is devoted entirely to endocrinology, and contains short articles by men who have delved into the mysteries of the endocrine glands, and it has added to the already increasing literature on the subject of the ductless glands in general.

Aside from its original articles, it has the usual editorial pages in the style of *The New York Medical Journal* proper. It also contains news items. It has correspondence from abroad, and its pages of book reviews are very interesting.

The Journal-Lancet is pleased to note in this issue of the new *Journal* a criticism of a recent book which was but recently adversely criticized in our columns. The former review contains more ridicule than the notice which appeared in our columns, but this in nowise detracts from the merits of the review. The book was written by an eminent man who had evidently "fallen from grace."

It reports the proceedings of various societies, including the New York State Society.

BOOK NOTICES

Sex Attraction. A Lecture Given at the Michigan State Normal School, July, 1919. By Victor C. Vaughan, M. D., LL. D., Professor of Hygiene and Physiological Chemistry, and Dean of the University of Michigan Medical School, Ann Arbor, Michigan. Paper. Price $0.50. Pp. 44. St. Louis: The C. V. Mosby Company, 1920.

It is a splendid lecture, presenting in a general way the physiologic relation between the sexes.

The subject is handled in a manner both delicate and masterful, and it may be heartily recommended to those interested. G. P. Crume, M. D.

Idling In Italy. By Dr. Joseph Collins. Volume I. New York; Charles Scribner & Sons. Price $3.00.

This volume, which comes from the pen of Dr. Collins following a year in Italy, is largely on Italian literature and allied subjects, but it also contains other essays by Dr. Collins.

The author has long been known to many of us as a prominent and skilled neurologist in New York City. He is a most illuminating talker and a clear-headed writer, and this volume from his pen will be a source of gratification to members of the medical profession, and should also prompt them, if they have the wit, to take up some other study, as suggested by Dr. A. Stuart M. Chisholm, who wrote "The Recreations of a Physician." Many medical men, however, are not ready to come out in the open with their studies or with the written word because they lack leisure or facility of expression.

Dr. Collins not only presents the results of studious research and mature thought, but has new ideas as well, and he demonstrates that the exceptional man or woman is able to do this because of the multiplicity of his or her ideas, and the varying trend of his or her experiences. The "idling" must have been somewhat strenuous judging from the wide range of subjects presented, which include literary criticism, and essays on sociology, religion and politics all written in clear, convincing style.

After reading the chapters entitled "Literary Italy," the reader feels that the very honesty and sincerity of the author have defeated, to some extent, his announced intention of "awakening in America a larger interest in Italian letters," for he so faithfully brings out the servile imitation of foreign literature, particularly of the French, that the reader is scarcely inspired to further pursuit.

In the essay "Saints and Sinners," the author's impatience with empty dogma crystallizes into such arresting sentences as these: "The thing the war dislocated most was further tolerance of the paradoxes of the Christian religion, the irreconcilability between preached and practised Christianity"; "What I should like from the church is a definition of her attitude toward war," and in "Woman's cause is man's" we find "The only thing that consoles me is history. When one recalls that all that which we now speak of as democracy flowed from one master mind in Cromwell's little army; that the Laocoön hold which the church had upon the people in the Middle Ages was broken by Luther and a few similar masters whose spirits successfully carried the idea of liberty; that all that which is now spoken of as industrial ascendancy flowed from the activities of one or two supermen in the mill districts of Northern England only three or four generations ago; then one is lifted above his depression. Liberty and tolerance have taken on a new significance."

In the same chapter we find this evidence of deep human sympathy: "Shall we be callous enough to see countless thousands of God's own, the poor, deprived

of the advantages of food and clothing, education and the gifts of hygiene—in brief, of everything that makes life worth living? I firmly believe that the rank and file of educated, thinking, serious-minded persons who are not immediately concerned with the possession or administration of any of these, will not tolerate them, and in so expressing my beliefs I do not feel that I label myself socialist."

In the concluding essay, "The Eagle Changes His Perch," Dr. Collins gives us a keen psychological study of Mr. Wilson. He says, "I am one of those who believe Mr. Wilson is a great man, but I am not concerned to convince others of it." "The esteem or disesteem in which Mr. Wilson is held in this country is due to his personality. He has the mind of a Jove but the heart of a batrachian. It is to the former that he owed his rise; it is the latter that conditioned his fall."

REPORTS OF SOCIETIES

HENNEPIN COUNTY MEDICAL SOCIETY

The regular monthly meeting of the Hennepin County Medical Society was held in the Library on Monday, February 7th, at 7:45 P. M.

The question of the Osteopathic bill, Senate File 253, was discussed. Dr. Strout spoke on this bill and voiced the opinion that the Hennepin County Medical Society and the State Association should have a committee to keep in touch with medical bills before the legislature. Dr. W. A. Jones said that the State Association Committee on Legislation is busy, and is opposed to personal lobbying. Dr. Farr thought that the Society should go on record as denouncing the bill, and let individuals write to their legislators. Dr. J. C. Litzenberg said that we should have a medical commission as he has advised before; an advisory commission to which the legislators could go if they wished advice. The weakness of lobbying is manifest. Dr. Litzenberg moved that the bill be condemned and an expression of thanks be tendered to Mr. Eaton for his work in defeating the bill. Carried.

Moved and seconded that the Society endorse bill for an act to amend Subdivision 4, of Section 375, General Statutes 1913, relative to the competency of witnesses. Carried.

Moved by Dr. W. A. Jones and carried that the Society endorse the bill for an act to amend Section 7703, General Statutes 1913, relating to limitation of actions in certain cases, including malpractice suit after two years.

Dr. Farr moved that the recommendation of the Executive Committee to approve of Library Budget for year 1921 of $2,000 be approved. Also moved the approval of the expenditure of not more than $50.00 a month for the purpose of obtaining someone for the stenographic work of the Society, and for the necessary help to keep the Library open every evening from 8:00 to 10:00. Carried.

Dr. Farr moved that the Society approve recommendation that the salary of Mrs. Jones, the Library assistant, be raised to $100.00 a month, beginning January 1, 1921.

A letter of thanks was read to the Committee of the Hennepin County Medical Society for collecting the sum of $1,142.00 to help their suffering colleagues in Vienna.

The report of the Board of Censors was read by Dr. David Owen Thomas; Dr. J. A. Meyers, Dr. David H. Daniel, Dr. J. B. Carey, Dr. W. E. Sawatzke, Dr. H. S. Goss, Dr. E. R. Eisler, Dr. J. L. Eberold, and Dr. Carpenter were reported favorably for membership by the Board.

Dean Lyon of the University of Minnesota talked on the bill for the establishment of a psychiatric hospital on the Campus, under the direction of the Board of Regents. It would be a benefit to the people, physicians, medical students, and nurses, and would increase the efficiency of the University Dispensary. Moved by Dr. A. S. Hamilton that the Society endorse this bill and send communications to local delegates in the Senate and House. Carried.

Mr. Bradley addressed the Society on the subject of extension of the work in fighting against tuberculosis.

Moved by Dr. Farr that the Society endorse the Bond Issue of $1,500,000 extending over fifteen years, House File 416, Senate File 299.

The papers of the evening were as follows:

Dr. Max Seham on "Practical Points in the Differential Diagnosis in Contagious Diseases."

Dr. F. E. Harrington on "The Recognition by the General Practitioner of Contagious Diseases in Their Relation to Public Health."

Miss Eva Anderson, Superintendent of Visiting Nurses, on "The Relation of the Visiting Nurse to the Work of the General Practitioner."

Discussion followed by Dr. E. K. Green, Dr. R. T. LaVake, Dr. David Owen Thomas, and Dr. A. F. Fleming.

R. T. LaVake, M. D.,
Secretary.

NEWS ITEMS

Dr. James P. Aylen, of Fargo, N. D., is a candidate for mayor of that city.

In January Minneapolis had one death from smallpox out of 988 cases reported to the health department.

Dr. C. E. Harkey, of the U. S. Public Health Service, has been assigned to duty at the Aberdeen Hospital, St. Paul.

St. Barnabas Hospital of Minneapolis celebrated its 50th anniversary on March 3. It is the oldest hospital in the city.

The annual report of the Cass County (N. D.) Medical Society shows that every eligible physician in the district is a member of the Society.

Alumni of the University of Minnesota living near Faribault met at the home of Dr. F. U. Davis, of Faribault, last month, to plan for the organization of an alumni unit in that part of the state.

The governor of Minnesota has announced that he will appoint a woman to membership on the State Board of Control if it is in his power to do so.

The Minneapolis General (City) Hospital is considering the purchase of radium for the free use of city patients unable to pay for such treatment.

Dr. L. B. Baldwin, superintendent of the University Hospital, has been appointed head of a commission to investigate the hospital bed shortage in Minneapolis.

The Alpha Kappa Kappa Medical fraternity gave its twenty-fourth annual banquet at St. Paul last month. The attendance was good. Dr. Emil Geist acted as toastmaster.

Dr. Wilfred Nelson, who has been associated with Dr. J. A. Freeborn, of Fergus Falls, for a short time, has accepted a hospital position in a Detroit, (Mich.) hospital.

The Minneapolis Health Commission has decided that the 80 tuberculous children in the city schools must be provided for in a separate building, probably in Lymanhurst.

A free dental examination of 15,000 children of the Duluth schools revealed only one perfect mouth in every 200 children. Free dental work is given by those needing it except in cases requiring gold.

Dr. T. D. Tuttle, of Washington, D. C., formerly of Helena, Mont., has gone to Helena to take charge of the new Federal hospital at Fort Harrison, which will be open for patients in a short time.

Sherwood, N. D., has a small hospital, which was opened last month by a local nurse, who is believed to have the business ability and professional training necessary to make a success of the enterprise.

Minneapolis is to receive from the State Board of Health $3,600 for the 9,499 birth and 5,035 death certificates issued by physicians in the year 1920. This is a contribution, enforced by law, of the city physicians.

At the annual meeting of the Oakland Park Sanatorium Commission, held last month at Thief River Falls, Dr. O. F. Melby, of that city, was elected president, and Dr. M. G. Milan was re-elected medical director.

The remains of Dr. Oscar M. Klingen, who died in war service in France in 1919, at the age of 30, were interred in Minneapolis last month. Dr. Klingen was a graduate of the Medical School of the University of Minnesota, class of '16.

Dr. Paul H. Rowe, who has been associated with Dr. Sippey, of Chicago, for the past four years, comes to Minneapolis next month to be associated with Drs. Gardner and Peppard. He will do gastro-intestinal work.

In a recent vote, taken by mail, for five directors of the General Alumni Association of the University of Minnesota, two physicians were elected, Drs. Charles Lyman Greene, of St. Paul, and Earle R. Hare, of Minneapolis.

Dr. Carl V. Malgrem, of Virginia, died last month in a Chicago hospital at the age of 54. Dr. Malgrem was a graduate of Rush, class of '95, and came to Minnesota from Michigan. He had practiced in Virginia for twenty years.

The third Minneapolis Clinic Week will be held on April 25-29. It will have all the good points of former meetings with added features suggested by experience. No man can spend even a day or two in these clinics without large value to himself.

Dr. Adolph A. Just, of Crookston, died on March 4, from heart failure at the age of 70. Dr. Just was a graduate of the Hahnemann Medical College and Hospital of Chicago, class of '81. He was Health Officer at Crookston at the time of his death.

Dr. Arthur E. Guedel, of Indiana, has located in Minneapolis for the practice of general anesthesia and consultation in this line. We believe he is a pioneer, at least in the Twin Cities, in this line of specialism for the profession. His office is 730 La Salle Building.

Dr. Sverre Oftedal, of Fargo, N. D., has withdrawn from the firm of Drs. Sand Tronnes & Oftedal, and has formed a partnership with Dr. Trygve Oftedal. The new firm has established offices, with *x*-ray and clinical laboratories, in the Christianson Building.

At the regular meeting of the Cass County Medical Society, held on the 4th of March at the Commercial Club, Dr. Arthur S. Hamilton, Professor of Nervous and Mental Diseases, University of Minnesota, presented a discourse on "Epidemic Encephalitis."

Dr. J. LeR. Haskins, a recent graduate of the Medical School of the University of Minnesota, has resigned from the U. S. Public Health Service and located in Morgan, taking over the practice of Dr. J. L. Adams, of that place, who will move to California.

The school physician of Virginia (Minn.) has examined the boys and girls of the junior and senior classes of the high school to determine their eligibility to the swimming pool. Three of every 100 boys, and eight of the 600 girls, were denied the privileges of the high school bath because of skin diseases.

The clinics given in Redwood County in February and March, under the auspices of the County School and the Red Cross Public Health nurses, were largely attended and attracted wide public attention. The local physicians are said to have presented public health subjects in an unusually attractive and forceful manner.

Dr. William L. Hollister, a retired pioneer physician, of Austin, died last month at the age of 84. Dr. Hollister was a graduate of Albany Medical College, class of '61. He came west in 1867, and located at Austin in 1871, and practiced there until his retirement twenty years ago. He was in the Minnesota legislature several times and held other official positions.

A conference on medical education was called by the Medical School of the University of Minnesota the fore part of the month, and was attended by a large number of distinguished medical educators. It was an informal conference on general medical education, and had no reference to University medical matters. The conference met for a second session in Rochester the day after its meeting in Minneapolis.

When the Minneapolis schools were turned over to the City Board of Health it was apparent to the board that five school physicians and forty nurses could not do the work. To meet the situation, the board devised the plan of examining the first grade children, the intake; the eighth grade pupils, the output; and the fourth grade children, the intermediates, very thoroughly. The first grade children have had two examinations this year. Dr. Taliaferro Clark, Assistant Surgeon General of the U. S. Public Health Service, has been invited to come to Minneapolis to consult with the board on the entire subject. He is now in the city for that purpose.

The National Board of Medical Examiners met in Minneapolis two weeks ago to hold an examination, mainly for the benefit of Northwestern medical men. Sixteen or seventeen doctors took the examination. It will be some time before the names of the successful candidates will be given out. All but three or four members of the board attended the meeting. Those in attendance were Surgeon General Braisted; Dr. Herbert Harlan, of Johns Hopkins; Dr. Victor C. Vaughan, of the University of Michigan; Dr. Horace D. Arnold, of Harvard; Dr. Austin Flint, of New York University; Dr. W. L. Bierring, of Des Moines, Iowa; Dr. D. A. Strickler, of Denver, Colo.; Dr. W. S. Carter, of the University of Texas; Dr. J. S. Rodman, of the University of Pennsylvania; and Dr. W. L. Wilson, of the Mayo Clinic.

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Can do routine laboratory and all *x*-ray work. Training obtained in high-grade laboratories. Prefers institutional work, but will accept a position with a clinic. Address 117, care of this office.

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I desire to hear from a physician who wants to sell his practice. Prefer a location with a hospital or suitable for one. Address 118, care of this office.

OPENING FOR A PHYSICIAN

There is an excellent opening for a good physician in a Northern Minnesota town of 1,000 inhabitants. Large territory; county seat; modern improvements. Address 119, care of this office.

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By young lady who is a high-grade stenographer and is capable of doing any kind of office work. References and testimonials furnished. Address 120, care of this office.

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The instruments, books, reclining chair, couch, and desk and chair of the late Dr. F. J. Duggan, of Grand Forks, N. D., are offered for sale cheap. Address Mrs. F. J. Duggan, 321 No. Third St., Grand Forks, N. D.

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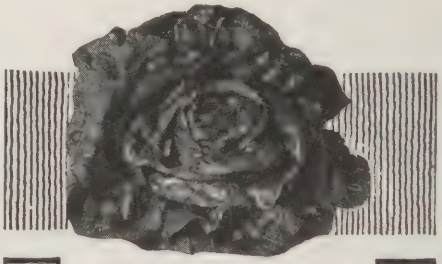
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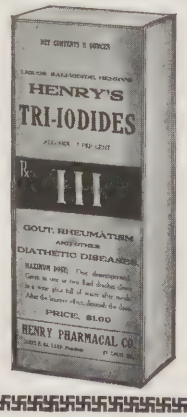
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DISTURBED FUNCTION OF THE THYROID GLAND*

By J. G. Cross, M.S., M.D.
MINNEAPOLIS

If our knowledge of the physiological action of the thyroid gland were more complete, study of its disturbed function would be much simpler. It may be considered as definitely established that the thyroid itself is important in regulating metabolism, development, and growth. These functions, however, are so intimately bound up with those of the other endocrines that it is difficult to separate the disturbance of one of these glands from that of another. Clinical experience plainly indicates that the generative organs, the pancreas, and the liver, as well as the suprarenals, the pituitary body, and the thymus gland are all concerned in hormone production. It is definitely known also that disturbance of one of the endocrine glands is likely to result in disturbed function of others, and ofttimes also a change in their size and morphology. The work of Cannon and others has thrown much light on the subject.

In the embryo the thyroid is developed from a folding in of the lining of the floor of the pharynx. It is thus an epithelial outgrowth. Quoting McCarrison[1]: "This outgrowth makes its appearance early and grows backward as a small pouch, which expands at the upper part of the trachea into two lateral wings. Its median stem becomes converted into a duct, the ductus thyreoglossus, which gradually elongates with the growth of the embryo. In some of the lower animals below the vertebrates this duct remains patent, the thyroid secretion emptying into the alimentary canal. In man it becomes obliterated, as a rule, about the eighth week of fetal life, the former opening at the base of the tongue being represented by the foramen cecum. Occasionally the thyroglossal duct remains patent in human beings, or incompletely obliterated, when it becomes the seat of fistula, cyst, or tumor formation."

"The bilateral expansions of the epithelial outgrowths branch and rebranch, ultimately forming groups of all epithelial masses, in which little closed epithelial-lined cavities are formed; these constitute the vesicles or secreting cells of the organ. These vesicles are caused by the breaking down of the central cells of a given epithelial mass to form the colloid contents of the cavity, the peripheral cells of the mass forming the vesicular lining. The majority of the ultimate cell masses combine to form the thyroid gland proper, but some may become detached from the main mass and wander downward with the heart, situating themselves in the various parts of the area lying between the root of the tongue and the aorta. In this situation, these cell rudiments develop into thyroid tissue in all respects identical with the gland itself. They are known as accessory thyroids, and may give rise to aberrant goiters, as, for example, lingual and retrosternal goiters. Accessory thyroids are most common in the neighborhood of the tongue and the hyoid bone, but they may occur under the maxilla, behind the pharynx or esophagus in the vicinity of, or more rarely in, the larynx and trachea near the

*Read before the Hennepin County Medical Society, November, 1920.

cricothyroid and aorta and in the mediastinal region."

The parathyroid glands in their development, however, have a common origin with the thymus.

The thyroid is a very vascular organ; as compared with the kidney, its blood supply is about five times as great. It receives its arterial supply from the superior and inferior thyroid arteries, which anastomose freely on the surface and send down branches which divide in the interior of the gland until their subdivisions surround every vesicle in a capillary network. The venous supply corresponds to the arterial, with free intercommunication, the larger veins emptying into the internal jugular and the innominate. The lymphatic system of the gland is no less complete. All the perivascular lymph-spaces with the lymph-vessels between the thyroid lobules end in lymphatic trunks, which join into subcapsular plexuses, and from these two large trunks carry the lymph from the gland to the circulation through the superior and inferior cervical glands. It is evident that the secretion of the thyroid thus finds its way directly into the blood-stream, and, therefore, that it is intended to manifest its action through the blood-stream on the cells of the entire organism and not upon one system or part of the body.

The nerve supply of the thyroid gland comes from the superior and inferior laryngeal nerves, and the superior cervical ganglia of the sympathetic. Nerve fibers are distributed to the muscle cells of the vessel walls, and also to the epithelial cells. Cannon has found that the secretory fibers to the cells are derived from the cervical sympathetic, though this is disputed, and that secretion of the cells was directly under the control of sympathetic impulses. It is experimentally found, after stimulating these nerves, that secretions started in five to seven seconds. He also shows that when the thyroid was continuously stimulated by joining the phrenic nerve to the cervical sympathetic, the operation resulted in tachycardia, increased excitability, loose bowel movement, exophthalmus on the operated side, great increase in the metabolism, and in some cases, an increase in the size of the adrenal body. It is interesting to note that L. B. Wilson found degenerative changes in the superior cervical ganglia regularly in exophthalmic goiter.

The process of secretion of normal human thyroid glands is difficult to study owing to the fact that healthy thyroids are not often encountered. When death is caused by any disease of an infectious nature, the thyroid is almost surely changed in some particulars. Study, however, has been made of thyroid-gland activity in animals. It is well known that the normal thyroid gland changes very greatly and very rapidly in its microscopic picture. In the same individual it is said that the shape of the cells, their arrangement, and the quantity of the colloid may change in the course of a few weeks, or even a few days. Investigations of secretory activities in the normal thyroid may be summed up very briefly by saying that our present knowledge of the subject is that there are two well-defined phases of secretory activities,—the colloid, or resting phase, and the phase of active secretion. As McCarrison puts it: "The secretion of the active substance of the thyroid is undoubtedly under nervous influence from the sympathetic, and varies directly as the stimuli received from the sympathetic system, just as it does in the salivary, gastric, and other glands. When there is call for more of the product of the thyroid, there is greater secretory activity. When there is less call for it, the iodine-containing colloid substance serves to store up what may be called the normal secretion of the gland during the period of lessened activity. McCarrison describes the process of thyroid activity as follows: "In the colloid, or resting, phase the acini are distended with a granular or perfectly homogeneous colloid, showing few, if any, vacuoles, and staining freely with all anilin dyes, as a rule, uniformly. The protoplasm of the cells stains uniformly. A nucleus is placed either at the center or at the base, and may almost fill the flattened cell. It is spherical or oval in shape, according to the degree of flattening of the cell. It stains uniformly, unless, as occasionally happens, it is vesicular. The vessels and capillaries of the organ are not distended. In the active, or secreting, phase of the thyroid, the vessels and capillaries become fuller. The colloid becomes vacuolated, and gradually undergoes absorption, wandering leucocytes assisting in the process. The absorption is more rapid at the periphery of the colloid mass, and a crenated appearance results. The vesicular epithelium becomes cuboidal or low columnar in type. The protoplasm is granular, and, on the discharge of these granules in the form of a thin secretion into the vesicles, or directly into the lymph-spaces, it may appear pale and vacuolated. The nucleus is centrally placed, and does not fill the cell. The edge of the epithelium toward the vesicular cavity is uniform at first, but, as the process continues, it may become ragged and irregular in places, merging into the colloid

substance. No increase of the stroma occurs, but the intervesicular tissue may appear relatively increased in amount, owing to the emptying of the vesicles of their colloid contents."

"The fresh secretion of the cells is quite fluid, or only slightly gelatinous, and in staining is pale. It finds its way readily into the lymph-spaces. It is only the thin fresh secretion which reaches the circulation in this way. The store of colloid substance is used up by a process of solution and absorption. Toward the end of the process, the secretions from the vesicular cells begin to accumulate in the vesicles, where it becomes intermingled with portions of the disintegrated cells, and increases in this property, in consequence probably of chemical change. This colloid substance then becomes impregnated with iodine in organic combination. Thus the gland returns to the colloid, or resting, state, and the whole process is repeated in accordance with the needs of the body for iodine-containing thyroid secretions. The whole process has for its object the absorption of the reserve store of iodine-containing colloid and its distribution to the body cells in accordance with emergency demand."

McCarrison thus looks upon the colloid as a substance designed to contain an emergency reserve of iodine, "a reserve which is not ordinarily called upon in the daily routine of the body demand. The thyroid cells elaborate sufficient for the daily needs, probably from some substance supplied to them in the blood, without calling on this reserve." The emergency ration, as he calls it, of iodine-containing colloid is, however, called upon when the supply of iodine in the food runs short, under the demands of excessive sympathetic stimulation, such as occurs in rage or fright, which Cannon has experimentally proved; in certain periods of life, such as puberty, menstruation, pregnancy, or lactation; also as the result of living in certain high altitudes, or when the body is invaded by microörganisms, or subjected to certain intoxications. In the event, however, of the operation of microörganisms, or intoxication, the process goes beyond the normal physiological demands, and pathological changes occur in the gland in consequence.

The colloid material, then, is to be considered as a reserve store of iodine-containing material. The amount of colloid in a gland is, therefore, not a measure of the state of activity of the thyroid, which is rather indicated by the degree of parenchymatous hyperplasia and by the amount of the true thyroid secretion lying between the cells and in the lymph-spaces.

Maring and Nemhart make it plain in this connection that acute colloid hypertrophy of the thyroid is not to be classed with the degenerative condition like calcareous, hyaline, or amyloid deposits; the latter are all connected with other pathological findings, such as hemorrhages, cysts, etc. No such secondary changes are present in acute colloid hypertrophy of the thyroid.

The causes of disturbed function of the thyroid are many. They may be grouped to some extent; thus many enlarged thyroids are definitely known to arise after a sudden grief or fright, or after prolonged worry or care. The influence of the nervous element is undeniable, whether or not it is also complicated by nutritional disturbances. It is a well-known fact, too, that enlargement and disturbed function of the thyroid is decidedly more apt to occur among those whose nourishment is defective, than among those in easier circumstances.

Endemic goiter is well known. Various goitrous districts have been investigated in the hope of finding a causative agent, or noxa, which produces the condition. Up to the present time, it must be admitted that no such causative agent has been identified. Certain districts have become well known for the large proportion of goiter among the inhabitants. It is even found in Switzerlanderland and other parts of Europe that residence in certain houses seems to produce goiter. Removal from the habitat has, in many instances, induced retrogressive changes in the enlarged thyroid. Thus our view is that an intensely local cause must be responsible in these instances for the goiter.

There is an increasing and convincing amount of evidence going to show that infections, either acute or chronic, have a marked effect upon the thyroid gland and its functions. Acute inflammation of the thyroid is relatively uncommon in the course of infectious diseases. Chronic inflammatory processes in the thyroid are somewhat more commonly encountered, but the more usual effect is a departure from the normal thyroid function as a result of the action of bacterial toxins upon the gland. Perhaps the most common source of bacterial toxin disturbing thyroid function is found in disease of the tonsils, nasal pharynx, or in pyorrhea alveolaris, which is not strange when one considers their proximity and the great frequency of infection of these tissues by pyogenic organisms.

Acute swelling of the thyroid is said to occur in about half the cases of secondary syphilis. Chronic tuberculosis sometimes leads to disturbed

function of the gland, and may predispose to Graves' disease. It is a fortunate fact, however, that the thyroid has a great power of recovery from functional disturbances induced by toxins of the bacterial group. An interesting theory has been advanced in regard to the common increase of weight following the convalescence from an attack of typhoid fever, namely, that the increase in weight is largely due to a myxedematous condition induced by depression of the thyroid function, caused by the typhoid fever itself. The field of intestinal stasis and toxemia in the production of hyperthyroidism, with or without change in the size of the gland, is too large to discuss at the present time. Sir Arbuthnot Lane and his followers showed plainly the effects of intestinal stasis in producing either type of derangement in human subjects, as well as in animals. It is quite probable that we as clinicians have not paid sufficient attention to the effects of chronic toxemias from relatively slight bodily disorders in the production of thyroid derangement, and, furthermore, that we have not recognized the results of thyroid derangements of function as such, as often as should have been done. This, of course, has been partly due to the lack, until recently, of means of relative accuracy in corroborating the effect of depressed or exaggerated thyroid action on the individual. The classical picture of a Graves' disease with its three cardinal symptoms has obscured the no less important symptom complex comprising the relatively mild symptoms arising from thyroid toxemia or a potential toxic goiter of the Graves' type.

Valuable help in the recognition of endocrine disturbance including that of the thyroid, has come about through the development of various tests. The measurement of rate of basal metabolism is a conspicuous example of the application of a physiological method of precision to a practical use. Through the work of Benedict and Dubois, and the development of a sufficiently practical form of apparatus, it is now possible to determine with a fair degree of accuracy, sufficient for clinical purposes, the degree to which the metabolic rate is depressed or increased. In hypothyroidism, as a rule, the rate of metabolism is decreased. In a condition of over-activity of the thyroid gland, however, a rate above the normal is obtained in an uncomplicated case.

Those of the widest experience in the application of this method, however, emphasize certain limitations to which it is subject: fever, faulty results of excitation of the patient, or movement cause an unduly high rate. Janney and Henderson[2] found a rate of —15 per cent in hypopituitarism. They state that a metabolic rate of 20 to 40 per cent below the normal is usually clearly indicative of thyroid deficiency; however, they call attention to the fact that patients in lowered states of nutrition from other causes may also show a greatly depressed metabolic rate; as, for example, diabetics without thyroid disease. Plummer has collected probably the largest series of cases of hyperthyroidism controlled by basal metabolism determination, particularly toxic cases. He evidently places explicit confidence in this method in determining, not only toxicity, but its degree, and he bases the selection of cases for operative interference on the metabolic rate to a great extent.

Means and Aub[3] believe that by means of metabolism studies it is possible to predict what patients probably will come to operation, and in which ones operation is contra-indicated. Woodbury[4] reports an exceedingly interesting study of hyperthyroid cases with metabolism determinations. The first were severely toxic cases with markedly positive epinephrin chloride reaction and increased metabolic rate, ranging from 20 per cent to 85 per cent above normal. The second group, however, showed milder symptoms and had no exophthalmos. All of these cases were subjected to the epinephrin chloride test; the basal metabolic rate was determined; the pathology of the thyroid was carefully examined after operative removal, and the clinical results of operation noted. In this second group were nineteen cases without exophthalmos, but showing a varying degree of toxicity, who did not show increase in metabolic rate above normal. Excluding five cases of simple diffuse hypertrophy on sections, one on colloid goiter, and two others of doubtful pathology, there were left eleven cases showing definite hyperplasia and pathology supposed to be typical of toxic goiter, but showing no abnormal increase in metabolic rate.

If one may draw a conclusion from the above, it is that there may be cases of undoubted hyperthyroidism, as shown by clinical signs, symptoms, and pathological findings in the gland, as well as response to the epinephrin and glucose tolerance test in the same manner as undoubted thyroid toxicosis with no increase in metabolic rate. We are compelled to acknowledge, therefore, that thyroid toxemia may exist without increasing the oxygen consumption of the individual, at least at times. There seems to be an al-

most constant relationship, or parallelism, between the increased consumption of oxygen in hyperthyroid state and the increased frequency of the pulse rate as shown by Sturgis and Tompkins.[5] They examined one hundred and fifty-four patients with hyperthyroidism. In all but 16 per cent of the patients, there was a basal metabolism rate of +15 per cent or more, associated with a tachycardia at rest of more than 90 per minute. In seventy of these cases, when the metabolism rate fell to normal, the pulse rate fell coincidently to below 90 beats. In a series of control of a hundred and six hospital patients with various diagnoses and normal basal metabolic rate, only five individuals had a heart rate of 90 or more to the minute. They consider this interrelationship of basal metabolism and tachycardia to be of practical importance in the recognition of a large group of nervous patients who have symptoms similar to those occurring in hyperthyroidism.

Janney and Henderson have pointed out the fact that the blood in thyroid disease tends to revert to the fetal type, characterized by a preponderance of the lymphocytic elements, with a decrease in the polymorphonuclear cells, together with a mononucleosis. They say these cases come on early and are very persistent, occurring in most hyperthyroid and hypothyroid cases. The average of their adult cases showed polymorphonuclears 55.1 per cent, lymphocytes 36.1 per cent, large mononuclears 3.55 per cent. The mononucleosis is rather constantly present. Addison's disease and hypopituitarism also show the same type of differential blood count. Falta[6] and co-workers found that an eosinophilia occurred in a number of hypopituitary cases, which may prove to be a differential point in diagnosis between that trouble and hypothyroidism. A sufficiently large series of cases have not been studied with this in view. A differential blood-count may be helpful as corroborative evidence, together with basal metabolism and other tests in determining the diagnosis of thyroid disease.

A subcutaneous injection of adrenalin chloride according to the method of Goetsch produces certain abnormal phenomena in an individual whose sympathetic nervous system is unusually sensitive to stimuli. The reaction consists in a rise of at least ten points in pulse rate and in systolic pressure. In sensitive individuals there is a coincident subjective feeling of excitement and discomfort, possibly looseness of the bowels and other derangement due to sympathetic stimulation. The Goetsch test is, of course, of very limited application, and furnishes information only as to endocrine disturbance in general. However, it has been found that thyroid toxicosis furnishes typical reactions to this procedure more commonly than do other diseased conditions.

The blood-glucose tolerance test seems also to have a certain value to differential diagnosis in the thyroid disease in common with other endocrine disease. As standardized by Janney and Isaacson[7] it consists in administering by the mouth to a patient who has been fasting for at least twelve hours one and one-half grams of glucose per kilogram of body-weight, diluted in 2.5 c.c. of water for each gram of glucose. It is found in all endocrine disease that the tolerance for glucose is disturbed as compared with normal individuals. The blood sugar is determined first before the administration of the glucose and again one and two hours later. Sugar is also looked for in the urine passed at stated intervals. Thyroid cases seem to show an abnormally increased amount of blood sugar with a delayed return to normal. The highest curve of blood sugar, together with glycosuria, is observed in cases of Graves' disease, and, therefore, this test should be applied in all doubtful cases in addition to the estimation of the basal metabolism.

To the above list of procedures, which are helpful in determining the nature of doubtful cases of thyroid function, must be added the therapeutic test in hypothyroidism. The response to the administration of thyroid gland substance or, better, the crystalline thyroxin as isolated by Kendall, can be easily recognized by basal metabolism determination. The report of Kendall and Boothby conclusively shows that hypothyroid states can be treated with thyroid gland intelligently by these means. The improvement noted in cases of myxedema and cretinism under these circumstances is most satisfactory. There is a large group of relatively mild hypothyroid cases which respond equally well to medication with thyroid-gland substance, or thyroxin, thus furnishing not only relief to the patient, but corroboration of the suspected diagnosis.

If apology is needed for describing the above procedures, which are acknowledged to be of rather limited application in diagnosis, it would be on the ground that we need all the means of help we can get in differentiating thyroid disturbances, whether accompanied by enlargement of the gland or not, from a large field in which must be included neurocirculatory asthenia and

all other nervous and nutritional disturbances accompanied by the various symptoms found in thyroid disease. We should not lose sight of the fact, also, that there are cases which perhaps may be left called dysthyroidism, in which there is a combination at the same or different times of depressed and exaggerated function of the thyroid substance.

A classification of goiter on some basis which will furnish an indication as to the mode of treatment is highly desirable. Such a classification on the basis of pathology of the gland is impossible. If the pathology of the gland is known through operative procedure, it neither furnishes any information as to the underlying cause of the disturbance, nor its future course. On the other hand, it has been shown repeatedly that not only are there mixed forms of goiter, but that one type merges into or becomes one of another type, both progressive and retrogressive changes taking place in the same individual.

For the purpose of treatment, the classification proposed by Lichty[8] appeals to the writer as coming nearer to furnishing a practical basis for the intelligent handling of these cases than anything that has appeared in the literature. With slight modification it is as follows:

First Group.—Changes in the thyroid gland without disturbance of thyroid function, the changes being due to pathology of other than the essential thyroid tissue. In this group are included the malignant tumors, simple colloid growths, cysts of adenomata, tuberculosis of the thyroid, syphilis, and infections of the gland with pyogenic organisms. Treatment of these conditions is governed by the same rules, either medical or surgical, as the same conditions elsewhere in the body. This group needs no discussion under our title.

Second Group.—This group comprises a very large class characterized by hypothyroid, or hyperthyroid function, with no demonstrable characteristic pathology, but a definite symptom complex. It must be remembered that patients in this class may develop a pathologic picture of some other type later. It is in this class that there is the largest field for the confirmatory tests of basal metabolism, the differential blood picture, the epinephrin test, the glucose-tolerance test, in addition to the most careful clinical observation. It is in this group of cases also that we have oftentimes failed to recognize definite symptom complexes for want of corroborative tests.

Patients belonging to this group do not require surgical treatment of the thyroid condition itself, though this often depends upon the surgical condition elsewhere, the removal of which is necessary before improvement can take place in the thyroid symptoms.

Adolescent Group of Goiters.—Very little needs to be said about this type. The condition is usually temporary, and commonly yields to medical care. It should be remembered, however, that some adolescent goiters in susceptible individuals are the beginning of other types, or that after disappearance another form of goiter may be ingrafted on the gland, previously only functionally enlarged at the time of puberty. These changes, therefore, should be looked upon as possibly potential goiters of the other type.

Marine and Kimdall observed 1,080 girls in the Akron public schools with the view to determine the course of simple goiter under the administration of iodine.

It is in this group of goiters that the iodine treatment is of use particularly.

Fourth Group.—The fourth group comprises the cases of hyperthyroidism with enlarged thyroid and thyrotoxicosis. These may be true parenchymatous hyperplastic goiters of the Basedow type, or they may be mixed goiters, containing adenomata, cysts, or of the predominating colloid type. This group contains the more serious goiters, which are apt to run a rather definite course, untreated, ending usually either in death, myxedema, or partial recovery. Whether exophthalmos is present or absent, depending upon the intensity with which the sympathetic involvement extends to the ophthalmic area, these are all serious cases. It is unnecessary to go into the symptomatology of thyrotoxicosis any more than to emphasize again the fact that the condition may exist without being accompanied by eye symptoms and signs. Even in the well-developed case, however, the basal metabolism, the glucose tolerance, response to epinephrin, the differential blood picture, and the presence or absence of complicating cardiac trouble should be determined accurately, even though these procedures seem unnecessary to a diagnosis of hyperthyroidism.

As regards treatment of the condition, it is in this group that surgical procedure designed to lessen the activity of the thyroid secretion finds its greatest field of usefulness. Partial thyroidectomy, or ligation of the arterial supply in part, has been very highly developed. The medical treatment, however, has advanced materially.

As we look back over the past ten years this is very evident.

As a preliminary to the institution of any line of treatment for thyrotoxicosis, in the light of our present knowledge that toxemia is a common cause of goiter, it is incumbent upon the clinician to make a careful search, not only for focal infections, but also for other sources of toxemia, of which intestinal stasis is a very common example. Correction of these faults and conditions is necessary to the success of any form of treatment.

Some years ago the giving of serum from thyroidectomized goats had considerable vogue. While good results were reported from its administration, it has largely fallen into disuse at the present time, if one may judge by the infrequency with which it appears in the literature. Vaccination with killed bacterial cultures is reported in some quarters to have been followed by benefit.

Squier[9] reports two cases of rather severe Graves' disease which improved remarkedly after the patient passed through a severe focal infection. Other instances of the same improvement are not lacking in our own experience and, in fact, are analogous perhaps to that which happens in other diseases in which we often see improvement in a chronic trouble when an acute infectious disease is engrafted on the same individual.

McCarrison, working upon the theory that the goiters encountered in India were caused by a specific organism growing in the intestines, used vaccine in treating them. He reports thirty-two cases treated in this way, in all of which the thyroid enlargement disappeared, as he puts it, after three to seven injections of killed mixed cultures. Some of the vaccines were made from autogenous growths. Others were made from sources outside the individuals, either another human case, or from the feces of goitrous animals of the same district. The results seemed to be equally good in either case.

From the above results it seems quite possible that in selected cases vaccine treatment may relieve the thyroid of some of its call for excessive work, and allow the gland to return to normal conditions.

Rest.—The more one sees of the disturbance of the thyroid gland, is he impressed with the advantage of early diagnosis. Prophylactic treatment, of course, covers only the adolescent group and those individuals in whom the development of goiter may be expected by reason of place of residence, heredity, or other predisposing factors. There are individuals, however, who come to us with fairly definite symptoms of thyroid derangement, in whom it is now possible to establish with a fair degree of accuracy a diagnosis upon which a rational therapy can be instituted. There can be no doubt that many of these cases can be saved from a more serious illness by the prompt and judicious care which one is enabled to give them, knowing that the thyroid gland is at fault. In some of these cases, rest and tonics, with or without nerve sedatives, as indicated, will be all that is necessary, assuming of course that correction of focal infections and other causes of toxemia are also out of the way. Hypothyroid cases will be benefited by the administration of thyroid substance, or thyroxin.

As regards the treatment of the well-developed cases of hyperthyroidism, one hesitates to enter into a discussion. The proper selection of cases for medical treatment is not always easy. The writer is of the opinion that the field for the medical treatment, or rather the non-surgical treatment, of goiter, is one which is enlarging and should become even greater than it is at present. With the earlier and more accurate diagnosis of hyperthyroidism, it should be possible to successfully treat the condition where medical treatment would fail in the neglected case. However, the selection of cases for medical or surgical treatment may be quite a feat of judgment.

The basis of all medical treatment of goiter must be rest, physical and mental, as far as it can be attained—often a most difficult thing to accomplish. For this purpose, it is most desirable that the patient be placed, if possible, in a well-appointed hospital with a tactful nurse. The rest treatment cannot be improved upon for goitrous patients. Loss of weight, which is so characteristic of the condition, has to be combated by forced feeding, as well as rest.

Very few of these individuals will do well unless they have some form of sedation for a time. Quinine hydrobromide is useful and seems to have no depressing effect. The other bromides have not been as successful in controlling excitability over prolonged periods. A single dose occasionally given, especially if given by enteroclysis, serves a very useful purpose, but its continuous use is followed by too much depression for the good it accomplishes. Many of the drugs of the antispasmodic group find their place in

the treatment of excitable cases that will oftimes procure rest and quiet when stronger hypnotics fail. A tactful, quiet nurse who understands the proper use of the warm or neutral bath can do much in the same way.

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A STUDY OF OTITIS INTERNA*

By Charles Darcy Wright, M.D.
MINNEAPOLIS

Nystagmus.—The eye-movements known as vestibular nystagmus are the to-and-fro movements, slow in one direction and rapid in the other, caused in the normal labyrinth by stimulation of the vestibular nerve centers. The movement is slow as the result of the vestibular stimuli, and rapid in return due to the stimuli of the nerve centers outside the vestibule.

Rotary nystagmus is named from the direction the upper pole of the vertical meridian of the cornea takes during the rapid jerk.

Great care must be exercised in observing nystagmus. Pick out a vessel on the sclera rather than on the iris. Nystagmus is easily classified. One never misunderstands the direction of the rapid jerk.

Oscillations of the eye, such as are seen in eye diseases, as, for instance, congenital cataract, cannot be mistaken for vestibular nystagmus.

Again, vestibular nystagmus always is intensified when the patient looks in the direction of the rapid jerks, and vice versa.

Vestibular nystagmus is the normal response to stimulation of the labyrinth, exactly as much as is contraction of the pupil the normal result of stimulation of the retina by light.

Test stimuli used to produce vestibular nystagmus are four in number, viz:

1. Galvanic.
2. Rotary.
3. Caloric.
4. Air compression and rarefaction.

The Galvanic Test.—The stimulus may be applied to one or both sides simultaneously. Bilateral test: two small electrodes based in a headband are placed in exactly corresponding spots in the concha on both sides. These electrodes are coupled to a divided connecting cord with one pole of a battery; the other pole is connected with a large electrode placed on the middle of the forehead. The battery cord is connected, first, with the kathode, and then with the anode. Of course, a galvanometer is in the circuit. While a current of the strength of 1m. to 4m. is passing, the patient looks from one side to the other, and the direction in which the nystagmus takes place is observed, provided, of course, that any nystagmus does take place. As the stimulus is equal on the two sides, nystagmus will occur only when the irritability of the labyrinth is not equal on the two sides. The test is not so applicable when there is spontaneous nystagmus present. In these cases the rod holding the fixation point must be adjusted to so extreme a lateral position that the spontaneous nystagmus does not occur. In unilateral tests the small electrode is placed on the concha, and the large electrode is placed in the hand of the same side.

The Caloric Test.—The stimulus in this test is the injection of water against the tympanic membrane (or labyrinth wall, if the drum is absent) for five minutes. If reaction from this test occurs after one minute, it is to be assumed that the membranous labyrinth is exposed or that there is undue irritability of the labyrinth from central disease. The water produces convection currents in the endolymph, that canal which is most vertical from the position of the head in which the test is applied being particularly stimulated. The test may be bilateral or unilateral.

The normal reaction when water below the body temperature is used (77°F.) and injected into the right ear, is rotary nystagmus to the left.

The nystagmus is reversed if water above the body temperature is used (105°F.). If water at exactly the body temperature is used, no

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nystagmus results, even though the test is carried to great lengths.

When the bilateral cold-water caloric test is used and a nystagmus results, it will be toward the side which is less irritable, away from the side which is more irritable.

The Air Test.—This stimulus is applied by condensing and rarefying the air in the external auditory canal. Nystagmus is produced both by rarefaction and compression, but, unfortunately, the direction differs in different individuals. Compression nystagmus is always, however, the reverse of rarefaction.

The air test is the strongest test, and its use is limited to cases that fail to respond to other tests.

The Rotary Test.—The rotary test is necessarily always a bilateral test, and consists in passive rotation of the patient. The canal most stimulated will be the one most nearly at right angles to the axis of rotation. The nystagmus will be toward the side stimulated if the movement of the endolymph is toward the ampulla, and vice versa. Example: Rotation around a vertical axis with the head erect, the horizontal semicircular canals will receive a maximal stimulation; rotation to the right, the movement of the endolymph occurring on cessation of the rotation will be away from the ampulla on the right, and toward it on the left; the after nystagmus, therefore, will be horizontal nystagmus to the left.

Other phenomena also follow rotation:

1. Sensation of falling of the body in the direction of the nystagmus, if the eyes are closed.
2. Apparent rotation of objects.
3. Body reactions, as follows: After rotary nystagmus has been produced, the patient closes the eyes and stands with feet close together and falls. The direction of the fall depends on that of the nystagmus.

Example 1. Rotary nystagmus to the right is induced when the head is erect (the quick jerk being in the frontal plane and to the right); the patient will feel as though falling to the right and will actually fall to the left.

Example 2. The head is turned to the right, through a right angle (the quick jerk will be in the sagittal plane and backwards); the patient will feel as though falling backwards, but will actually fall forwards.

Example 3. The head is bent forward at a right angle (the quick jerk will be in the horizontal plane and toward the right); the patient will turn toward the left without falling.

Reaction movements (when the quick jerk is in the horizontal plane) seldom seriously disturb equilibrium, or cause dark spots before the eyes or visual field phenomena.

Rotary and vertical nystagmus often produce nausea, and even temporary loss of consciousness. Pallor, slowness of pulse, respiratory disturbances, and syncope occur singly or together after rotary nystagmus, especially in neurasthenic individuals and those suffering from advanced arteriosclerosis.

Nystagmus occurs during rotation in opposite direction to that occurring on cessation of rotation. To observe it the person must be rotated with the patient in order to follow it.

When rotation is long carried on, after the cessation of a post-rotary nystagmus, a third nystagmus occurs in the same direction as the initial nsystagmus during rotation. It is limited to a few short jerks, analogous to entoptical vision or persistence of retinal images, and dependent on central activities. This is termed by the Germans "nach-nach" nystagmus.

It would seem that some universal term should be used to describe the three varieties of nystagmus. The writer would suggest "rotary," "primary," and "secondary" nystagmus.

Opaque glasses should be used in some tests. The nystagmus lasts longer, and the opaque glasses prevent convergence and fixation of the eyes upon any object, which, of course, would tend to check horizontal nystagmus. Rotary nystagmus is not affected by the glasses. Spontaneous nystagmus is mostly rotary; at least, it is never purely horizontal.

When spontaneous nystagmus is present and the rotary test is to be applied, a head-band is used similar to that used for a head-mirror, and a curved rod (convexity upward) with a bulb point is attached to the band in place of the head-mirror. (This imitation form of the Blix-fixator of Barany is thus easily improvised at any time.)

The band is applied to the head and the rod moved in a lateral excursion to just beyond that point in the median line where the spontaneous nystagmus ceases. In rotary tests ten revolutions of the chair should be made in about twenty seconds, and the rotation should be suddenly stopped.

Significance of Induced Rotary Nystagmus.—When the primary nystagmus is greater in one direction than the other, the irritability of the labyrinth is lost or impaired on that side toward which the nystagmus is lost, shortened, or comparatively diminished.

Rotary nystagmus is very useful to us, when combined with other symptoms, in making a diagnosis of destruction of the labyrinth. Example: Patient looking straight ahead shows no nystagmus. When the opaque glasses are put on there is a slight nystagmus to the right visible, presumably toward the sound side. This would indicate a long-standing lesion or destruction of the labyrinth of the left side. If the rotary nystagmus is stronger toward the right side, or lasts longer, the diagnosis may be considered certain.

After disease, when the tympanum is filled with morbid products, or if there is acute tympanic inflammation, caloric tests may be nil when the labyrinth is normal. In this condition, however, the rotary test will differentiate. Example: Patient has right ear filled with granulations or cholesteatomata, and the caloric test is negative; if, after rotation to the right, nystagmus to the right is greater than toward the normal side, or if it lasts longer than 20 seconds with the head erect, destruction of the right labyrinth may be excluded, even when the nystagmus toward the sound side lasts longer. Again, if in this case nystagmus was less than 15 seconds with the head erect, and the nystagmus toward the sound side lasted about 30 seconds, destruction of the labyrinth would be indicated. If, in addition, there was difference in the number or extent of twitchings in favor of the sound side, destruction of the right labyrinth would be positive.

When with the bilateral galvanic test or the caloric bilateral test, no nystagmus occurs, the vestibular apparatus may be assumed to be normal. Differentiation between irritability and destruction of the labyrinth is sometimes extremely difficult.

In speaking of the caloric test here, we assume that the external auditory canal and the tympanum are unobstructed. When the caloric test gives no nystagmus, and the kathode nystagmus is away from, and the anode is toward, the side of the suspected lesion, the irritability of the vestibular nerve is diminished, but the end apparatus is normal.

Now if, in this case, the kathode nystagmus was toward, and anode away from, the side of the suspected lesion, the vestibular nerve on the side of the lesion is hyperirritable and end apparatus normal. If, in this case, there was caloric nystagmus toward the side of the suspected lesion, and kathode nystagmus away from, and anode nystagmus toward, the side of suspected lesion, the irritability of the nerve and the end apparatus is diminished on the diseased side.

When there is caloric nystagmus toward the side of the suspected lesion, and no galvanic nystagmus, the nerve is normal, but the irritability of the vestibular apparatus is diminished.

When there is caloric nystagmus toward the side of the suspected lesion with kathode nystagmus toward, and anode nystagmus away from, the side of the suspected lesion, the irritability of the end apparatus is diminished, yet that of the nerve is increased on the side of the lesion.

When caloric nystagmus is away from the side of the lesion, with kathode nystagmus toward, and anode nystagmus away from, the side of the suspected lesion, both end apparatus and nerve are hyperirritable on the side of the lesion.

This latter test is found generally in cases of considerable intracranial pressure. In labyrinthine tests a tentative test should first be used because of extreme idiosyncrasy existing in some to the procedure.

When there is erosion of the bony labyrinth and the membranous labyrinth is intact, a fistula often remains for a very considerable portion of time. If at this time the opening be touched, severe nystagmus and vertigo result. Here the compression and rarefaction test produces greatly exaggerated nystagmus. These phenomena are known as the fistula test and are of great importance, often indicating immediate surgical interference.

After extension of inflammation to the membranous labyrinth, the latter is thickened and coagulation of the endolymph often results, which renders it immobile. Rarefaction and compression here will produce nystagmus when all the other tests fail.

Static and dynamic tests for equilibrium are rather intricate. Practical static tests are:

1. Standing with feet close together and eyes closed, raise on the tip-toes, balance on one toe.

2. When a patient stands on a goniometer (which is a board with a hinge in the middle so that one side may be raised and another lowered), the feet are placed close together; if he maintains equilibrium until the anterior inclination of the board is 35° and the posterior inclination is 25° and until the right and left inclination is 35°, he is said to have passed the static equilibrium test. When the eyes are closed the angle is reduced 5° each way.

If a patient can hop backward on one leg with his eyes shut, he can qualify as a normal dynamic test.

In interpreting equilibrium tests we must remember that disturbances of equilibrium are not

always due to labyrinthine diseases, and that such diseases may, as far as the labyrinth is concerned, be completely compensated for. Of course, when all the tests are properly gone through with, we shall know whether the reflex-response of the vestibular system takes place, but we shall still have to make a diagnosis as to the location and nature of the lesion through which any disturbance of these functions is brought about.

Acute loss of function of the vestibular apparatus is most often seen in acute suppuration, in hemorrhage of the labyrinth, fractures of the base, operative accident, and lues. It is immediately followed by horizontal and rotary nystagmus, vertigo, rotation of self and objects, nausea, and generally vomiting, and even an inability to stand. The patient lies on the sound side and looks toward the side of the lesion to minimize the nystagmus.

Nystagmus tests do not modify the existing nystagmus. The subjective symptoms disappear generally in from one to five days. In two or three weeks the nystagmus has generally entirely gone. At this time positive reaction with the kathode on the diseased side shows that the vestibular nerve is still capable of transmitting impulses, unless the kathode current necessary to give reaction is twice the normal current.

The reaction of the galvanic current occurs through the nerve endings and through the nerve itself. In case of destruction of the labyrinth it requires double the current to bring about definite kathode reaction (through the nerve itself), the nerve endings being destroyed.

Unilateral labyrinthine disease shows deafness, shortened bone conduction, loss of perception of the higher tones, attacks of giddiness or vertigo, subjective sounds, and positive reaction on the diseased side, and, generally, disturbance of equilibrium by actual test. Hyperirritability for galvanic stimulus with the kathode points to pathological irritation of the labyrinth, and, as we have seen, the strength of the current is a quantitative measure of the abnormal increase of irritability. Four ma. is the strength of the current required to give kathode reaction in the normal labyrinth. If 2ma. gave the reaction we could thus call the irritability increase as 2ma. In such a case the kathode reaction on the sound side would be 6ma., as 2ma. would be used up in balancing the abnormal irritability on the diseased side. When kathode irritability is increased on the diseased side it will be found apparently diminished on the sound side. Likewise, with the anode on the diseased side, 2ma. would be required to balance the abnormal irritability, plus 4ma., which is necessary to produce normal reaction in the individual, equalling 6 ma.

As time goes on, undoubtedly we shall gain more knowledge of the symptoms due to trouble of the vestibular system, and differentiate between derangements of the purely acoustic part of the labyrinth with greater definition.

In complete mastoid operation with brilliant illumination, close inspection, and a perfectly bloodless field (through the use of adrenalin), cells near the semicircular canal, the aqueduct, or dehiscences will not be mistaken for fistulous openings of the labyrinth. Fistulous openings from the middle ear generally open through the fenestra ovalis into the horizontal semicircular canal or through the promontory into the cochlea.

The facial canal opens a way of infection to the apex of the cochlea. Hemorrhage in the labyrinth from mastoid operations, granulations in the labyrinth, or pus in the labyrinth, make the semicircular canal show up as a dark streak. A normal semicircular canal also looks dark if the illumination is very bright and the labyrinth capsule is very thin. When the horizontal canal has long undergone destruction, the former prominence shows as a groove. When more destruction has occurred the prominence may show an opening directly into the vestibule. The stapes may be found in place or it may have disappeared, when the fenestra will be found open, its lumen so visible as to leave no doubt of its opening into the vestibule. The promontory may be easily seen, and a fistulous opening observed from the middle to the internal ear, and this opening is common when the perforation has occurred from within, out.

The vestibular system is far more generally affected early in suppurative disease than is the cochlea.

Noises and deafness are the signs of loss of function of the cochlea. Loss of function of the cochlea, however, unlike loss of the vestibular function, may occur from central nervous disease, in which case both ears will be affected. It is hard to tell if one ear is absolutely deaf. The best test for absolute deafness in one ear, is the placing of the nose apparatus of Barany in the sound ear, and then testing the suspected ear. In no other way can the noise be shut out from the good ear. As we have seen, the cardinal symptoms of disease of the vestibular system are as follows: Vertigo, nystagmus and disturbance of equilibrium, together with the vestibular

reflex test anomalies. Any, or all, of the first three repeatedly occur without any labyrinthine disease.

Vertigo occurs from irritation or injury in various parts of the brain; anemia of the brain; collapses from the exhibition of alcohol, and other drugs; sudden interference of binocular vision; false visual impressions; all without disease of the labyrinth. Even putting on or suddenly removing a perfect correction of ametropia may cause vertigo.

The amount of vertigo experienced in labyrinthine disease is not in proportion to the magnitude of the disease. Spontaneous nystagmus, when away from the suspected side and if intensified when the eyes are directed toward the sound side, with vertigo, points very strongly to labyrinthine disease.

In cerebellar lesions nystagmus may be either way, and it often suddenly changes. Nystagmus due to central disease with loss of function of the labyrinth, is persistent and increasing.

In clinical work the differential diagnosis of uncomplicated labyrinthine disease from various other conditions simulating it, is of vital importance. It is equally important to tell when uncomplicated labyrinthine disease has complicated itself by extension to the meninges or brain. Unfortunately, there is no test or tests that will give an absolute differentiation in all cases of irritation of the labyrinth due to extralabyrinthine disease from uncomplicated labyrinthine disease. We have seen that central nervous (chiefly cerebellar) disease with labyrinthine symptoms may be differentiated reasonably well from uncomplicated labyrinthine disease.

To the surgeon another vexing question presents, namely, whether all symptoms may be accounted for by labyrinthine disease complicated with meningitis serosa. Correct diagnosis in some of these cases will severely test the erudition and judgment of the surgeon.

When we suspect that suppurative middle-ear disease may be complicated by disease of the vestibular apparatus, the following data will be useful in making differential diagnosis.

1. If only middle-ear disease exists, nystagmus will occur normally from the caloric, galvanic, and rotary tests, and the tests will agree with each other on both sides.

2. There will be no vertigo or spontaneous disturbance of equilibrium.

3. There will be no spontaneous nystagmus, and none in looking straight forward behind opaque glasses; none, or very slight, in looking to extreme right or left; none from passive jerk of the head.

4. The position in bed will be uninfluenced.

5. There will be no nausea or vomiting.

These symptoms may be compared with those already tabulated, following complete or partial destruction of the labyrinth.

Hearing will be totally lost if the destruction extends to the cochlea. When there is a fistula of the labyrinth, but the membranous labyrinth is still intact, spontaneous nystagmus may be present, or may show when looking straight ahead through opaque glasses, and the other fistulous symptoms may show. Rapid movements of the head will cause vertigo, which may occur without apparent cause, and it is often accompanied by nausea and vomiting. There may or may not be tinnitus, or partial deafness. The patient will choose to lie on the sound side. When the membranous labyrinth disintegrates, spontaneous nystagmus begins. Response to the caloric, galvanic, and rotary tests diminishes. There may or may not be tinnitus, and the hearing is generally greatly diminished.

When there is inflammation of the serous membrane of the labyrinth before there is destruction of the function, there will be changing nystagmus, spontaneous, and looking forward from behind opaque glasses. In rare cases spontaneous nystagmus is absent, but will be induced by rapid jerking of the head. Caloric ipsolateral nystagmus will be greatly diminished. Rotation and galvanic nystagmus will be little altered. Of course, there will be no fistula symptom; hearing usually impaired; some vertigo; and even nausea and vomiting in some cases. Patient will choose the sound side to lie on.

When we suspect that labyrinthine disease is complicated with cerebellar abscess, the following suggestions are useful. In such cases, caloric reaction on the ipsolateral side is negative; there is no fistula symptom; spontaneous nystagmus is always present; also, nystagmus from looking straight forward through opaque glasses; hearing is generally lost; there are usually vertigo and vomiting; equilibrium disturbances; caloric and galvanic tests are without value.

If then the spontaneous nystagmus is toward the diseased side and does not shift with varying positions of the head, and the tendency to fall does not depend upon the direction of the nystagmus, diagnosis of the cerebellar abscess may be made. Now, if, in such a case, the nystagmus is toward the sound side and the direction of the fall tendency depends on that of the nsytagmus,

and varies with the position of the head, and the patient lies on the sound side, the diagnosis of diffuse labyrinthine suppuration may be made. If these symptoms do not decrease in two to five days (especially if the labyrinth has been operated upon), or if they increase, then we must assume intracranial lesion. If there is cerebellar abscess with a normal labyrinth there will be spontaneous nystagmus on one side or the other, protean and often aberrant nystagmus. Spontaneous nystagmus may or may not show by looking straight forward through opaque glasses. Head jerks produce spontaneous nystagmus or increase the aberrant form present. Various combinations of equilibrium disturbances and vertigo are present; vomiting; position in bed generally determined by the nystagmus; hearing is not lost; there may or may not be tinnitus. There is hyperirritability of the vestibular end organ; this is a very important symptom. Again, aberrant nystagmus may be always presumed to be of central origin.

Serology.—Observation of the spinal fluid is often helpful in differential diagnosis of complications of otitis interna.

A turbid fluid with various microörganisms means suppurative meningitis, which may be circumscribed or otherwise.

A clear, normal, non-coagulable fluid is found often in sinus thrombosis, subdural or epidural abscess, simple serous meningitis, meningism, and may occur with circumscribed meningitis.

High pressure of fluid is found in sinus thrombosis, and sometimes with serous meningitis. Predominant polynucleosis in cloudy, purulent fluid, with microörganisms, provided that the fluid coagulates, indicates acute diffuse meningitis, purulent or non-purulent, or circumscribed meningitis.

Clear fluid with no leucocytosis is a good contraindication of meningitis when questionable symptoms from acute otitis media arise.

From the foregoing it will be seen that otitic leptomeningitis may be fairly well diagnosed from the cerebrospinal fluid. In these cases the fluid is always cloudy, may be greenish or yellow, often typically purulent from various microörganisms, such as staphylococcus, streptococcus, or pneumococcus. A fairly equal leucocytosis prevails. The pressure may be high or low. Cytodiagnosis confirms by typical increase of polynuclear leucocytes in otitic meningitis.

Turbid fluid with hyperleucocytosis and no bacteria very strongly indicates meningeal complications of otitic cases.

Before considering labyrinthine operation, rachicentesis should always be done, the pressure recorded by spinal manometer. Seven to nine m. pressure may be considered normal. Pressure above nine m. is abnormal.

Alarming labyrinthine symptoms, complicating otitis media, have often been entirely relieved by spinal puncture.

When the symptoms of intracranial lesion become evident, the following observations are useful.

Hemianesthesia, hemiparesis, of the opposite side of the body, and sensory and optic aphasia point to abscess in the temporal lobe.

Optic nerve disturbances are found in cerebellar abscess, but then speech disturbance in cerebellar abscess presents bulbar characteristics, in contradistinction to the findings of sensory and motor aphasias noted in the temporal lobe cases.

Ipsolateral hemiparesis suggests cerebral abscess. Of course, both cerebral and cerebellar abscess give oculomotor disturbances. Paralysis of the motor oculi, the abducens, and ptosis is common in temporal lobe abscess.

In cerebral abscess the eye symptoms are less frequent and less general; also, conjugate deviation often occurs combined with nystagmus toward the healthy side. Nystagmus is very uncommon in temporal lobe abscess, and is found only when the abscess is located far back. Pain in cerebral abscess is localized on the occiput and forehead; in central abscess it is localized on the vertex.

Differential diagnosis between labyrinthine suppuration and cerebellar abscess, complicating a labyrinthine suppuration, must be made by the determination of the labyrinthine irritability.

In differentiating brain abscess from meningitis, the temperature curve is very diagnostic. Generally, meningitis shows a high temperature; and high temperature is seldom present in abscess cases.

It must be remembered that symptoms of intracranial pressure may occur from circumscribed meningitis, and nystagmus may result by meningitis or hemorrhage involving the internal meatus. Disturbances in hearing are more common in meningitis than in brain abscess.

Nape of the neck rigidity is a symptom of meningitis. Later on, diagnosis of meningitis is cleared by general convulsions, the small rapid pulse, loss of consciousness, retraction of the abdomen, and Cheyne-Stokes respiration.

In meningitis serosa there are high temperature and severe pressure symptoms. Such findings

are not observed in thrombosis of the transverse or cavernous sinuses.

It must be remembered that in children acute otitis media, with or without mastoiditis, and with no brain lesion, may give choked discs, headache, nystagmus, vomiting, vertigo, and facial paralysis.

In hysteria, with otitis media, many symptoms of brain disease may be present. The anesthetic areas are always ipsolateral. Uremic states, where there is chronic otitis, give a clinical picture of brain invasion, and in these cases spinal puncture is of great diagnostic value.

All suppurative otitis complicated with vestibular disease, is serious, and it becomes more so as the vestibular symptoms increase, and, as often occurs, there is diminution of the function of the cochlea.

Labyrinthine operation is indicated when there is serious disease of the whole of one of the parts (usually the vestibular). It is indicated when, by injury or operation, the stapes has been dislocated and the symptoms grow worse (nystagmus and equilibrium disturbances), and especially when there is increasing temperature. It is indicated when labyrinthine disease is complicated with infection of the posterior, or, more rarely, the middle fossa. It should not be done for circumscribed disease of the labyrinthine wall, or of one canal, more especially the horizontal one. We must remember that infection of the cerebellar fossa may occur directly from the antrum through the petromastoid canal.

The best way to open a brain abscess in any location is to follow the path of the infection when possible. The operative procedure against internal ear disease and brain complications from ear disease I hope to present for your consideration at some future time.

BIBLIOGRAPHIC NOTE

The above paper was put together from my notes after a careful review of the subject as far as I could get late information. I claim no originality for it. I have endeavored to compile and condense for the use of the busy practitioner diagnostic procedures and conclusions. Labyrinthine diagnostic tests have been used most directly from the wonderful writings of Sir Charles Ballance. Repeated condensations from Barrany, Kopetsky and Politzer have been made. References are Abadie, Browning, Chipault, Braun, Conner, Koats, Gordon, Broca, Nisci, Grossman, Heine, Babinski, Bell, Ossipow, Lanhardt, Widell, Wittie, Keen, Branmhill, Laurens, Boidin, and Koenig.

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THE INDICATIONS FOR NEPHRECTOMY IN RENAL STONE*

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Renal stone is dealt with surgically by pyelolithotomy, nephrolithotomy, or nephrectomy. The indications for nephrectomy have not been very fully set forth by the writers on renal surgery and the decision as to the necessity for nephrectomy is usually left to the surgical experience and surgical judgment of the operator. One well-known authority, in a monogram on genito-urinary diseases, covers the whole ground with the following statement: "If the kidney is mostly destroyed, if a large pyonephrotic sac is present, or if the remaining kidney tissue is highly inflamed, then nephrectomy is indicated."

A nephrectomy may be either primary or secondary. It is sometimes a most difficult problem to decide when a primary or even a secondary nephrectomy for renal stone should be done. While the golden rule in surgical treatment is, and always should be, conservatism, yet there are cases where, after a conservative operation has been successfully performed, symptoms have returned, the primary infection having persisted or stone having re-formed. Until our knowledge of the pathological etiology of renal calculus has been broadened, this must necessarily be the case, for, I believe, at the present time, we cannot foretell in which case stone will re-form and in which it will not. Stones have been removed when infection was present and the infection has disappeared, and in apparently non-infected cases they have returned. Infection appears to be the most important factor, and when present the chances for recurrence are thereby increased. Neither the length of time in which stone has been present, the size of the stone or stones, nor even the degree of infection is necessarily a contra-indication to a conservative operation. Three years ago I removed a stone that had given symptoms for fourteen years. It was 5 c.m. in its longest diameter and 2 c.m. in its shortest. There was pus in the urine. This patient is now well and entirely free from symptoms. Re-examination of the urine showed it to be free from pus. On the other hand, a very small stone obstructing the upper end of the ureter may lead to such enormous dilatation of the kidney and

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destruction of its function that nephrectomy would be called for. The following is a case in point.

Mrs. S. had symptoms of renal stone for four years. Pain was not a marked feature in the history. There was pus in the urine, but not a large amount. The radiogram showed a very small shadow in the right renal pelvis. The function of the left kidney was normal. No specimen could be obtained from the right. At first sight it seemed that in this case removal of the stone would be all that was indicated, but when the kidney was exposed at operation, it was found dilated into a large hydronephrotic sac. A stone was impacted at the ureteropelvic junction, the structure surrounding the stone being densely fibrosed. The kidney was removed, the ureter being divided below the stone.

A large pyonephrotic kidney calls for preliminary drainage and secondary nephrectomy. This may require to be a subcortical enucleation, as was done in three of my cases. Rather than secondary nephrectomy the term two-stage nephrectomy might well be applied in these cases.

Tuberculosis of the kidney associated with stone, or stone associated with tuberculosis, calls for nephrectomy, provided the other kidney is normal. Here the nephrectomy is done for the tuberculosis, and not for the stone necessarily.

Carcinoma likewise calls for nephrectomy if diagnosed early enough to hold out the hope of non-recurrence.

One other condition in which nephrectomy is done might be mentioned in passing. A patient has typical and well-marked symptoms of stone. Radiograms may or may not have located it. When the kidney is exposed no stone can be found. It is needless to say that the removal of the kidney under such circumstances is bad surgery, yet it has been done. Morris, while admitting that he removed a kidney in his earlier experience where the stone could not be found, and that Czerny and Kosinsky had also done the same, mentions the fact only to condemn it.

One of my patients, a man aged 28, was suffering from severe and frequent attacks of left renal colic, accompanied by hematuria. Repeated *x*-ray examinations were negative. Ureteral catheters passed to each kidney without obstruction. An exploratory operation was done, but careful palpation through an incision in the pelvis did not locate any stone. A band of tissue crossing the ureteropelvic junction was divided. No abnormal vessels running to the lower pole were found. The wound was closed, recovery was normal, and the patient was apparently well. Seven months later he had a return of colic and passed a small uric-acid stone.

The use of a portable *x*-ray machine in the operating-room will help materially in locating a stone when the kidney is exposed. This type of stone, however, does not obstruct the ray sufficiently to be visualized with the screen.

The difficulty in arriving at a decision as to nephrectomy is not in those cases "where the kidney is mostly destroyed or where a large pyonephrotic sac is present or where the remaining kidney tissue is highly inflamed," but in those cases where stones recur after removal from comparatively good kidneys. Most of us must have had the unpleasant experience, after successfully removing a stone from the kidney, of having the patient return in a short time with a recurrence of symptoms or of hearing that the case had gone elsewhere for further advice. This has been my own experience in two cases, and I have had the care of similar cases previously operated on by the most competent surgeons.

I have at the present time under my care a young man who had a stone removed from the right kidney in 1916. In 1919 another was removed. Both operations were done by surgeons of note. He now has symptoms of recurrence of stone, and the *x*-ray shows a shadow in the right kidney area. He has also passed stones. Pus is constantly present in the urine. The left kidney has always been normal.

I think this is a case in which nephrectomy should be advised.

Two points, however, must be considered, the possibility of bilateral stone, and the recurrence of stone in the remaining kidney. Rovsing,[1] in his series of 533 cases of renal stone, found bilateral stone in 58, or a little over one in every ten patients, while Brassch[2] found stone to be bilateral once in every six cases. Cases are recorded where after nephrectomy stone has promptly formed on the opposite side.

These cases of recurrent stone require, and in fact every case of urinary stone requires, most careful pre-operative and postoperative treatment. The free use of distilled or rain water, or the waters from certain springs that do not contain lime salt, as advocated by Ochsner and also by Rovsing, can do no harm, and may do a great deal of good. We have no scientific proof that distilled water, more than any other wholesome drinking water, such as is supplied to all modern cities and towns, lessens the tendency to stone-formation, or the recurrence of stone, and the clinical evidence is not convincing. Personally I cannot get away from the germ theory as the causative factor in urinary stone. Absence of

pus does not necessarily mean the absence of infection.

Morris makes a distinct difference between primary and secondary calculi, and says that the latter "occur in kidneys which have been the seat of previous disease whereby lime salts are precipitated from the urine as the result of chemical changes caused by the presence of micro-organisms in the kidneys; they are the secondary effects of septic processes within the pelvis and calyces of the kidney.

Chas. H. Mayo[3] reminds us that the shells of the crustacea are formed, not by the mollusks themselves, but by the bacteria that inhabit the water in which they grow, and says that Turnbull has pointed out that a change in environment,—that is, a change from the English coast to the Mediterranean coast,—changes the form which the shell assumes. It is fairly well recognized that the incrustations on the teeth and that gall-stones are due to the action of bacteria. The taking of large quantities of drinking water may so change the environment that the bacteria do not develop, or hastens them along the urinary channels through which they are normally eliminated from the body before any evil can be done. Stagnant pools of water always favor the growth of germ life.

Changing the reaction of the urine, if highly acid, by large doses of potassium citrate or, if alkaline, by acid sodium phosphate combined with urotropin, or by an intensive treatment alternating from one to the other from time to time, is of decided benefit. The use of an autogenous vaccine, apparently in some cases, has given good results. Focal infections have been blamed for almost every disease under the sun, and should not be lost sight of in this condition.

Crowell and Thompson[4] have recently advanced a treatment for the prevention of recurrent stone, following nephrolithotomy which promises good results. It consists in irrigation of the renal pelvis with 0.5 of 1 per cent silver nitrate solution twice weekly, the strength being increased and continued until infection has disappeared. Two weeks after operation treatment is again begun, and continued as long as infection persists.

In my last few cases of stone where infection was present I have adopted the following method: A rubber tube of very small caliber is inserted into the pyelotomy incision. The opening in the pelvis is closed about it with a purse-string suture or a few Lembert stitches of fine catgut, one stitch anchoring the tube in place. The distal end of the tube is secured to the skin with a stitch of silkworm-gut. Care should be taken that there be no tension on the tube between the inner and outer stitches lest the end of the tube become displaced from the opening in the renal pelvis. If a nephrolithotomy is done, the tube can be inserted through the incision in the kidney tissue. Through this tube two or three drachms of a 10 per cent solution of argyrol are instilled into the pelvis of the kidney daily, until infection has cleared. If the ureter has proved to be free from stricture before operation, I do not believe there is any danger of fistula following this procedure. The results so far have been good, but the cases are too few and too recent from which to arrive at any definite conclusions.

W. J. Mayo,[5] in a review of 450 operations for renal stone, states that nephrectomy was done in 204, usually for pyonephrosis complicating stone, and also states that the condition found at the second operation showed that in many cases nephrectomy should have been the primary operation.

In Rovsing's[1] series of 533 cases, with 295 operations, there were 55 nephrectomies, or 18.6 per cent. These figures show the necessity for earlier diagnosis, and more thorough pre-operative and postoperative treatment.

When, however, conservative measures have proved to be futile the patient's interests are best served by a secondary nephrectomy.

The following points should be emphasized:

1. As the question of primary nephrectomy may arise during an operation for stone after the kidney is exposed, an *x*-ray of both kidneys, both ureters, and bladder should be taken in every case. Catheterization of both ureters should be done to eliminate ureteral stone or stricture. A functional renal estimate of each kidney should be made. A blood, urea, and creatinin should also be made if the urea elimination is below normal or the functional renal test shows any degree of renal insufficiency.

2. These same precautions should be taken when secondary nephrectomy is under consideration, and should the opposite kidney show any sign of stone or disease, or its function be markedly impaired, nephrectomy should not be done if the first kidney is eliminating urea. It should be mentioned that the function of the opposite kidney may be reflexly suppressed, and when this has fully recovered after removal of stone from the first kidney nephrectomy could then be considered.

3. The strains and types of infection present

in renal stone call for further study and investigation, because from this knowledge may be evolved a line of treatment for the prevention of recurrent stone.

4. More thorough pre-operative and post-operative treatment of these cases will reduce to a minimum the necessity for secondary nephrectomy.

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DISCUSSION

Dr. H. B. Sweetser (Minneapolis, Minn.): I think the essayist has taken a very sane position on this question, and I was very glad to hear him say that we should not be too quick in deciding on a primary nephrectomy when operating for stone. The opposite kidney may have its function temporarily suspended because of the operation, and, until this resumes its function, even a small amount of normal kidney tissue in the diseased kidney may be essential to tide the patient over this intervening time. For this reason I believe a secondary nephrectomy is decidedly the wisest procedure in the vast majority of cases. Unless the infection is very grave, it is difficult to see how anything but good can come from such delay.

Dr. Byron B. Davis (Omaha, Neb.): I have been very much pleased to have this subject brought before the Association. I want especially to commend Dr. Maclean for recommending such a thorough investigation of both kidneys before the operation.

In any case where there is a possibility that a nephrectomy may be done, I think that is the case that needs the most careful pre-operative study. We should know absolutely what that other kidney is doing before we think of doing a nephrectomy. I have been impressed in the past by the wonderful recuperative power the kidney possesses.

I had the experience of having a number of traumatized kidneys where I removed the shreds of half the kidney; and the remains of the kidney performed the duties of the whole kidney. In operations for stone, I feel very conservative about doing a nephrectomy, and would especially back up what was said by Dr. Sweetser, that by waiting the other kidney has taken on the secretion and increased its activity. At the same time I have had the experience of wishing I had done a primary nephrectomy, and I think it is better to have regrets in that direction than to remove a kidney which might have been saved.

In the main, I believe, considering what a very important organ the kidney is, we should be rather conservative about taking out the kidney if it seems to have any amount of secreting area left.

Dr. Herman E. Pearse (Kansas City, Mo.): There seems to have been some reason in the development of the human body—something that must be called for by the organism on account of its environment to produce such a development of renal structure that one-third of one kidney will carry on the function for the body. There must be very frequent assaults made on the renal system that take place during the apparently normal phases of life. It is well known that one-third of one kidney will maintain life if called upon to maintain its maximum activity.

The question of whether we are going to cut out the kidney or leave it, brings up the question of the drainage of that kidney. It seems to me that, if anything has been worked out in the last few years, it has been that we must attend to the drainage of that kidney by its ureter. The careful pre-operative study seems now by the genito-urinary men to be made in vertical position. They inject the kidney, photograph it with the patient standing, and, through the fluoroscope, watch for things over the course of the ureter that interfere with the drainage.

Dr. A. E. Benjamin (Minneapolis, Minn.): I am interested in infection of the kidney and drainage. This septic condition may be often overcome by putting a tube into the kidney and washing it out with argyrol. In addition to that, we should be sure that the ureter is not blocked. Occasionally we find that a stone has damaged the ureter so that there is some stricture, and the kidney will not function perfectly. As Dr. Pearse has stated, we must see that these kidneys drain well, that they are on as high a level as possible when operated on, and plenty of fat put around the ureter and below the kidney to push it up so that it will become fixed high up which will favor drainage.

Dr. Maclean (closing): I was particularly interested in listening to the discussions of my paper, and am glad it brought out a few points.

Dr. Sweetser spoke about these cases of colic where no stone is found at operation, and I have been wondering if you can get this severe colic without stone, and if there is not usually a stone that has been overlooked. In my own case I think that the stone must have been there when I operated.

Albaron says that in every case of renal stone there is also stone nephritis. I suppose it is true to a certain degree, but I have seen the pathological report where there was a stone, and no evidence of nephritis could be found.

I was also glad to hear that Dr. Sweetser had operated so many times on one case, because we very often have to do this. We are, however, very much tempted to do a complete operation and make sure the trouble is not going to occur again.

Dr. Davis brought out the point of a very thorough investigation before the operation, and the reason I mentioned that case was because, at first sight, I did not think a nephrectomy would have to be done at all.

Dr. Pearse brought out the point of drainage of the ureter, which is important and which I mentioned. Dr. Benjamin brought out the point of putting a tube in the kidney. The tube I use is not put in as a drainage tube, but is a very small one, put in for the purpose of injecting the argyrol solution, thus saving the patient the discomfort of having a cystoscope passed and the solution injected into the pelvis of the kidney through a ureteral catheter.

THE
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MINNEAPOLIS CLINIC WEEK

The men in charge of the program of Minneapolis Clinic Week are striving to make the work done this year of the highest attainable value to visiting physicians. The spectacular will be taboo, and the fundamentals, as exemplified in the best modern practice in medicine and surgery, will be emphasized.

The division of the time devoted to the day's work will be better than last year, and is the result of experience gained in past Clinic Weeks.

At least three distinguished speakers from outside the state will bring valuable discussions of timely subjects. Dr. Walter Timme, of New York, the well-known neurologist, will speak at one afternoon session on "The Endocine Problems," the most urgent medical subject under discussion to-day, and Dr. Timme will throw a flood of light upon it.

Dr. Kellogg Speed, of Chicago, associate professor of surgery in the Northwestern Medical School, will give an address on "Appendicitis in Children Under Twelve Years of Age."

The speaker for the evening of the annual banquet of the Hennepin County Medical Society will be a man of national reputation and one well worth hearing.

It is an inspiration to hear such men talk on subjects of which they are masters and which have vital interest for every physician.

IS TUBERCULOUS MENINGITIS A CURABLE DISEASE?

We have been prone to look upon meningitis, particularly of tuberculous origin, as invariably fatal, whether cerebral or spinal. The last few years, however, have given us an opportunity to change our viewpoint and also to offer some encouragement in the prognosis of these cases.

Given a case in a child anywhere up to the fifteenth or seventeenth year who has perhaps not developed uniformly and has not been exposed frequently to tuberculosis, there may come a time when the power of resistance is low, and during the active growing period particularly, when a mild exposure may result in a mild type of meningitis. These young people present all of the ear-marks of diseased meninges together with pressure symptoms, stuporous states, partial convulsive attacks, and a mild or even a moderate degree of temperature.

The experimental tests to determine the presence or absence of tuberculosis are not always to be relied upon. For instance, the spinal fluid may not exhibit the cells which suggest that the disease is of a tuberculous order; it may simply present an intensification of the ordinary findings, and yet the clinical picture is that of a tuberculous invasion. The supposition is that these cases are mild types of infection, or slow and not very active, and yet they are present in sufficient intensity to produce pathological changes.

What can we promise the family, under such circumstances, and what can we do to relieve the situation? We know that a patient suffering from tuberculosis of other parts of the body, for instance, of the kidney, of the genitals, and of the various membranes, may get well, or clinically well at least, and go on for many years in comfort. Not infrequently many of our tuberculous joint cases make a recovery,—at least are spared for years, with perhaps some deformity but no active tuberculosis.

The post-mortem table has shown us time and again the different types of focal, tuberculous invasion,—the pulmonary type and the bone type as well as the skin type, from which the patient has made an apparent recovery and has died from some intercurrent disease. Large cavities sometimes heal, large invaded areas of tissue have corrected themselves or at least left only a scar. Why, then, should tuberculosis of the meninges be such a formidable disease? It commonly is, we know, but occasionally there is a

possibility of an arrest of the infection and a sealing-up and closing-up of the tuberculous part. Cases are recorded by writers of children who have had tuberculous meningitis once or twice, the first attack perhaps leaving only the signs of a recovered tuberculosis and the second attack ending in death.

In a recent article in the *American Journal of Medical Sciences,* by Dr. Francis Harbitz, of Christiania, many instances are cited where tuberculosis of the brain and cord membranes showed recovery, the patient living months or years after the first attack. But invariably the small thickening of the meninges or the fibrous nodules along the course of the vessels indicate that at some time previously the patient had a tuberculosis which became arrested. Dr. Harbitz says that the recovery from tuberculosis of this type may depend on the nature of the infection, and, of course, in persons who have suffered from a chronic and relatively benign form of tuberculosis. The factor of body resistance is, however, a more important feature. That sixty per cent of tuberculous meningitis occurs in the first two years of life, and usually these cases are followed by death; that the cases with recovery have occurred in older children and in adults, hence, the age of the patient seems to be an important factor, and, considering all other things, too, the low grade of infection from which the patient suffers must not be overlooked. Another factor which has entered into the recovery of these cases is the withdrawal of fluid from the spinal canal, repeatedly, by frequent lumbar punctures, if necessary every two or three days. In some instances these patients are recorded as clinically well.

GLORY BE! DIAGNOSIS SIMPLIFIED

Here again we must refer to the newspaper in the heralding of a new discovery,—the diagnosis of disease and deformity by inspection of the iris. It is called "iridiagnosis," and is said to have been discovered by a Hungarian. Strangely, too, he discovered it in the iris of an owl, which had had a leg broken in an attempt to escape capture. The man looked at the eyes for a moment and noticed a black spot appear. Instantaneously he made a diagnosis of a broken leg. And when the broken leg was restored to its normal condition, instead of a simple black spot there was a white ring around the spot.

It is claimed by the newspapers that this theory has been accepted by British authorities, distinguished, of course, and that it has been adopted in Sweden, England, and America; that even Chicago has an "iris" expert. These men look down into your iris and discover what must be compartments in the iris or in the chamber of the eye. And from the appearance of these various little compartments a diagnosis is made.

This will save the internist a good deal of trouble, provided he adopts the method. It will not be necessary for him to make any more test-meal diagnoses. The *x*-ray man will not be obliged to follow the course of his bismuth-buttermilk preparations down through the gastro-intestinal tract; he can look at your eyes and tell you exactly where your food lies. The gynecologist will be shorn of his honors. He can glance in your orbit and tell whether the uterus is flexed or displaced or swollen, or filled with something eventually to be revealed. No digital examinations will be necessary,—nothing, in fact. The neurologist will be absolutely powerless in his attempt to relieve, in the old-time ways, the nervous people who come into his office; but he can make a diagnosis by looking into the iris. He can tell by these simple means whether his patient is constitutionally inferior, mentally defective, an imbecile, or a moron. And, fortunately for him, the tell-tale iris will reveal the condition of the spinal cord, and he can see whether it is diseased or simply out of place. The surgeon will have his diagnosis wonderfully simplified; and, fortunately for him, too, he will be able, by keeping in close touch with the iris while operating on his patient, to determine what he is doing and whether he is doing the right thing or not.

But who is going to cure the patient? If he has a liver complaint or a concealed and diseased appendix, an ulcer of the stomach, or a pelvic inflammation, the remedy must lie in the hands of the surgeon. If this sort of thing keeps up, and new and "wonderful" methods of diagnosis are placed at the easy disposal of the physician and surgeon, why not let the people diagnose their own diseases? The study of the iris is certainly not a very difficult proposition, and it seems possible that a man or woman of ordinary intelligence can grasp the methods of diagnosis in a week or two. They can advertise it to the public through the press, and the gloomy thought that comes over us now is that we who have worked long and hard to perfect ourselves in medicine and its various branches will be of no earthly use.

EUTHANASIA

The term *euthanasia* is not seen as often as it was a few years ago. To the refined and to those who wish to put as light a definition upon it as possible it is described as an easy or calm death, but to those who are more indifferent and who have, perhaps, a warlike mind and who have become indifferent to death, the definition is quite in line with their way of thinking—the killing of people, which is done because they are suffering from an incurable or painful disease. These remarks are prompted by the fact that in the daily press there is an account of a hopeless lunatic, a giant, fifty years of age, who has been in the Norwich (Conn.) State Hospital for the insane, and while members of the legislature were going about the institution their attention was called to this insane man. He has been insane for ten years, and the superintendent of the hospital informed them that for five years he has been uncontrollable without manacles, and that it requires three or four of the strongest "guards" of the institution to manage him whenever he is moved or given a bath. The newspaper account then goes on to say that, when all the other patients are in their "cells," or rooms, they have to manacle this lunatic, both hands and feet, when he is taken to the bathroom.

This case so impressed the Connecticut legislative visitors that someone was seriously impressed with the advisability of enacting a law permitting the merciful killing of persons hopelessly and violently insane. They, of course, expect, when they bring their so-called "bill" into the legislature, to meet with violent opposition. And so they will, for this has been the case for many years past, when even the mildest advocates of even the mildest form of euthanasia have dared to show their heads.

There is very little doubt in the average sane mind that many hopeless people should be done away with. But who is going to take the responsibility, for sometimes these "hopeless" cases are restored to partial sanity, and sometimes (occasionally only) they may get clinically well. Consequently, is anyone going to condemn the so-called "hopeless lunatic" to a merciful death?

This sort of legislation is all wrong, and never will and never can get anywhere. It is easy enough for the law to condemn a man to death who has taken a human life. It is very difficult for the law to condemn an insane man to death for killing a man because the insane man has a perfectly legitimate reason for killing and for being allowed to live. This sort of thing does not impress the editor of THE JOURNAL-LANCET very keenly with the idea of murdering a hopeless lunatic. It suggests that an institution which harbors a patient of this kind should use different methods of treatment, and this statement is made with a full knowledge of the situation where there are brutal and dangerous lunatics. Some of them are just crazy enough to know that they are crazy, and sane enough to know that their insanity excuses them from all kinds of crime. No doubt some of the nurses, or attendants, as they are called in state institutions, frequently feel a strong desire to kill or to treat brutally a crazy man because he is definitely and desperately mean and ugly, in spite of his insanity. But the laws which cover justice and the forfeiture of human life take these things into consideration and will not subscribe to any sudden methods of expulsion from this earth, be the man mad or not mad.

There seems to be no danger of Minnesota going off on a tangent on this question with the full knowledge of the fact that it has many citizens within its borders, within and without institutions, who perhaps ought to die, but who do not, and some of them will not unless they be bandits who take a chance either for life or death. Even a policeman who shoots a man who had tried to escape from him, charged with a crime or suspected of a crime, is often tried in the courts; and yet he is an officer of the law, fulfilling his duty in protecting others from destruction of their property. Consequently, there are very few policemen who will shoot a man, even though they know he is a desperate character or a criminal, even if taken in crime. Who is going to judge?

DR. ARTHUR J. GILLETTE

As THE JOURNAL-LANCET is closing its forms for the press, word comes from St. Paul that Dr. Arthur J. Gillette is dead—dead at the age of 57!

Dr. Gillette's monument has already been erected in his years of devotion to crippled children and especially in the Phalen Park State Hospital for such unfortunates, which was the first institution of its kind in America. He will long live lovingly in the memories of those children—thousands of them—and their parents and relatives.

But his beneficences went far beyond those

treated by him or under his direction. His scientific work made it possible for orthopedic surgeons the world over to do better work, and to alleviate suffering in its keenest form.

And more: His monument stands four-square to the world, and if there be written upon three sides of it memorials to his scientific worth as a physician and surgeon, the fourth shall be reserved for a testimonial to the manly man—manly in all the relations of life.

Since the above was written we have received an appreciation of Dr. Gillette by one who knew him best, and we gladly give it space in our columns.

DR. ARTHUR J. GILLETTE—AN APPRECIATION

In the death of Dr. Arthur J. Gillette, Minnesota and the Northwest have suffered a great and enduring loss. He was a pioneer in the field of orthopedic surgery, and when that specialty was still in its infancy he brought Minnesota to the front rank in this field. He caused Minnesota to see, appreciate, and attack the problem of the crippled child a long time before most of the States realized that such a problem even existed. As a result there stands to-day the model institution at Phalen Park—a monument to its founder and a dispenser of past, present, and future blessings, the value of which can never be measured in terms of money alone.

It is unnecessary to write here of Arthur Gillette's prominence in the field of orthopedic surgery; of the many honors bestowed upon him by the Associations of which he was listed a member; of his numerous and able contributions to the literature of his specialty. All of that is a matter of record and is well known.

In him there passed away a man; a real and lovable man. He was of unexampled buoyancy and good cheer which radiated from him and contributed not a little to his great professional success.

He was of wide culture and was interested in many of the fine things of life outside of his profession. To the younger members of his profession he was always a wise and honest counsellor and a good friend.

He excelled as a teacher: his enthusiasm was contagious. His lectures were masterpieces because he was a master of his subject.

Those who knew him best loved him most.

Emil S. Geist, M. D., Minneapolis.

BOOK NOTICES

Maternitas. A Book Concerning the Care of the Prospective Mother and Her Child. Charles E. Paddock, M. D., Professor of Obstetrics, Chicago Post-Graduate Medical School. Price, $1.75; pp. 210. Chicago: Head & Co., 1920.

The fact that this book has reached a third edition suggests that the author is successful in his aim, which he states to be "to aid the prospective mother during her pregnancy and to guide her in those trying days and weeks after the baby has come and the trained nurse has been dismissed." Notwithstanding its forbidding Latin title, the book is remarkably free from technicalities, and the material is presented in a clear, direct style.

Part I, "The Mother," discusses the hygiene of pregnancy, preparation for confinement, and convalescence after confinement. The importance of an early examination by a physician and of close coöperation with him throughout the pregnancy is emphasized.

It is gratifying to note the author's high moral tone in the reference to prevention of conception: "Women give flimsy reasons for not wishing to bear children; they seem to forget that the justification and ennoblement of wedlock is the birth of children."

Part II, "The Care of the Baby," contains many helpful suggestions in regard to nursery comforts and conveniences, and gives directions as to what to do for minor ailments and in emergencies.

It is to be regretted that in bringing the work up to date, the needed revision on the subject of fumigation was overlooked.

The publishers are to be commended for the excellence of the type and illustrations, which add much to the attractiveness of the book.

Medical Clinics of North America. November, 1920. Volume 4; No. 3, St. Louis Number. Philadelphia and London: W. B. Saunders Company. Six numbers per year; paper, $12.00; cloth, $16.00.

1. Two cases of arthritis with marked improvement following removal of focal infections are reported by George Dock.

2. Extensive studies made of four cases of ductless-gland deficiencies are given by William Engelbach. Amenorrhea was a symptom common to all of them.

3. William Washington Graves carefully demonstrates a physical examination of the nervous system, calling attention to the various signs that may be elicited in the diagnosis of a neurological case.

4. Low-grade temperature elevations are discussed by Charles Hugh Nelson. Infectious causes should be sought in all cases of temperature elevation, but he thinks an unbalanced heat-regulating mechanism may account for some of them.

5. Francis M. Barnes, Jr., has treated several cases of neuropsychic reactions, associated with ovarian deficiency, by administration of ovarian substance. He thinks the results warrant continued investigation.

6. After a survey of a large series of cases of endocrine disturbances, John L. Tierney concludes that determinations of the basal metabolism-rate are valuable in the study of these cases, and that determina-

tions of carbohydrate tolerance are of a definitely lesser value.

7. Ralph A. Kinsella compares two cases of endocarditis, one with and one without bacteremia. He bases his prognosis on this difference.

8. Eight cases of chronic non-tuberculous lung-infections are presented by J. Curtis Lyter, with differential diagnosis suggested.

9. Two cases of Paget's disease (osteitis deformans) are presented by Louis H. Hempelmann. Graphic descriptions of them are given, but the reader misses the photographs which do not accompany the paper.

10. A case of mediastinopericarditis has been studied for years by Ellsworth S. Smith. When the attachment to the chest-wall had become firm enough to interfere seriously with heart action, cardiolysis was performed under local anesthesia. The results were most gratifying. The operation has been performed on thirty-three cases reported in the literature with good results in twenty-four. It should be urged in certain cases according to the author.

11. W. H. Olmsted advises the use of five per cent vegetables in diabetes, instead of complete starvation. He emphasizes the dangers of acidosis in starvation.

12. Drew Luten expresses the opinion that only cases showing impairment of heart-function should be labeled "heart disease." Digitalis should be given with expectations of good results in auricular fibrillation only.

13. Horace W. Soper discusses several clinical types of constipation, and outlines the treatment of each.

14. A striking case of paroxysmal tachycardia, continuing for ten days and terminating in death, is reported by Lewellyn Sale.

15. Sidney I. Schwab reports five cases of disturbed mentality from different causes. He emphasizes the necessity of making a careful study of each case of insanity before consigning it to custodial institutions.

16. A case of severe diarrhea in an infant was treated by W. McKimm Marriott by giving Ringer's solution intraperitoneally and alkalis into the longitudinal sinus to restore the physiological processes of the body. Then suitable feeding was instituted.

17. Borden S. Veeder emphasizes the necessity of breast-feeding in all infants, though complemental feeding may be needed to keep up the nutrition.

18. Two cases of diarrhea in infants, one due to fermentative processes and one due to an infection, are shown by John Zahorsky, who discusses the treatment.

19. Jules M. Brady discusses, briefly, some practical points in infant-feeding, based on observations of weight-curves.

20. P. C. Jeans advises the treatment of hereditary syphilis in children with the same thoroughness that is used in treating acquired syphilis in the adult. He finds evidence of neurosyphilis in the spinal fluid in at least one-third of all luetic children.

Olga Hansen, M. D.

Dermatology. The Essentials of Cutaneous Medicine. Walter J. Highman. Macmillan Company: New York City, 1921.

In his preface Dr. Highman says that his book is dedicated to the novice and the general practitioner, and that he has attempted to write a complete and simple book without sacrificing detail.

The volume is unique among dermatologies. There is a real effort to correlate cutaneous with internal medicine. The etiology is thoroughly discussed. The definitions are splendid.

One is disappointed in not finding Dr. Highman's wonderful contributions on cutaneous histopathology included under a separate division or as part of the general discussions.

Therapy is not detailed, but suggestive.

The book is printed on rather tough paper (but is easy to read). The half-tones are grouped. Excellent photography and the short descriptions of the conditions portrayed contain much concise information.

For the general practitioner the book is useful; for the student it is encouraging, for it simplifies a decidedly difficult subject; for the dermatologist and lecturer it supplies a new point of view and condenses in a decidedly personal manner all of the best modern conceptions of the various diseases discussed.

My only regret is that Dr. Highman did not include his histopathology.

H. E. Michelson, M. D.

Surgical Clinics of Chicago. Volume iv, No. 5 (October, 1920), Philadelphia and London; W. B. Saunders Company, 1920. Published bi-monthly. Price per year: paper, $12.00; cloth, $16.00 net.

As in the case of previous numbers, this issue contains a wide variety of surgical clinics, including abdominal surgery, gynecology, orthopedics, aural surgery, and other branches. The cases are briefly but so completely and graphically presented that one cannot help but retain the salient points of each article.

A case of "dumping stomach" is presented to illustrate one of the sad results of unnecessary gastric surgery. In this case the stomach and jejunum are separated and each repaired. The various methods of undoing or reducing an ill-advised gastro-enterostomy are described and illustrated.

Dr. David C. Straus at Cook County Hospital, presents a case of renal tuberculosis, discussing the various types of onset of the disease and the practical points in diagnosis and treatment.

Dr. Eisendrath shows two cases of renal infection, discussing the clinical features and pathology. The clinic is well prepared and written. This is the first of a series of clinics on infections of the kidney by Dr. Eisendrath, and others are promised for subsequent numbers.

Of interest to orthopedic surgeons are the clinics by Bevan on dislocation of the patella, and by Dyas on compound fracture of the femur in a child.

The clinics of Dr. Tivnen, at Mercy Hospital, and of Dr. Shambaugh, at The Presbyterian Hospital, are important for eye and ear specialists.

Drs. McWhorter and Cornell present interesting gynecological and obstetrical cases.

Eight other clinics take up conditions of a wide range of interest. Finally, there is an article on surgery and disease among the pre-Columbian Indians of North America.

Volume IV, Number 4 (August, 1920).

Dr. Bevan's clinic is one of unusual and varied interest. His cases include one of splenectomy for splenomegaly, pilonidal cysts, x-ray burns, repair of large postoperative hernia, and three abdominal conditions.

Dr. George E. Shambaugh (Presbyterian Hospital) presents several cases of deafness, which should be of interest to the otologist.

Dr. Chas. A. Parker (Cook County Hospital) discusses the treatment of bow-legs and knock-knees by osteoclasis. He also presents a case of obscure perverted muscular action, cured by lengthening the flexor tendons of the fingers.

Dr. N. Eisendrath discusses and illustrates the varieties of prostatic hypertrophy and surgical problems involved. The cystogram of a patient two years after prostatectomy proved to be very valuable.

Dr. A. J. Ochsner (Augustana Hospital) presents very interestingly a case of dural edothelioma of the brain, on which he operated with success.

Dr. Kanavel presents and discusses various tumors of the face.

Dr. Gatewood has a case of acute pancreatitis with recovery, and a case of tuberculous appendicitis with absence of any demonstrable abnormal signs in the lungs.

Dr. E. L. Moorhead (Mercy Hospital) presents a case in which an inflammatory mass caused obstruction of the sigmoid with palpable abdominal tumor.

There is also an interesting article on the use of the cautery among primitive peoples, by Dr. R. L. Moodie, of the University of Illinois.

THEODORE H. SWEETSER, M. D.

THE ANATOMY OF THE NERVOUS SYSTEM. Stephen W. Ranson, M.D., Ph.D., Professor of Anatomy, Northwestern Medical School, Chicago. Philadelphia: W. B. Saunders & Co.

This book covers a subject which, at best, is often thought dry and tiresome, in so clear and concise a manner that it will undoubtedly be of great value, not only to students, but to physicians who have need of such a book for reference.

The subject matter is well arranged and interestingly written. Considerable use is made of italics to emphasize important matter, and the work is profusely and excellently illustrated with 260 figures.

The author, as he states in his preface, has made an effort to present his subject, not only from the anatomical viewpoint, but also from the physiological, and, to a less extent, from the clinical side.

The importance of the relationship between the anatomy and physiology of the nervous system and neurological findings can hardly be over-emphasized, and, if a criticism were to be offered, it would be that this aspect might have been further enlarged upon.

A. W. MORRISON, M. D.

LABORATORY MANUAL OF THE TECHNIC OF BASAL METABOLIC RATE DETERMINATIONS. By Walter M. Boothby, A.M., M.D., and Irene Sandiford, Ph.D. Section on Clinical Metabolism, The Mayo Clinic, Rochester, Minn. Philadelphia and London: W. B. Saunders Company, 1920. Cloth, $5.00 net.

Physiological chemistry has come to play a very large part in clinical diagnosis. Modern methods are less technical than the old, and are better adapted to the practical clinical laboratory.

. Among the more recent determinations which give valuable diagnostic information is that for obtaining a true basal metabolic rate.

The basal metabolic rate is determined by direct or indirect calorimetry, and although there is a great deal of literature on these subjects, it has been too advanced and technical for the average laboratory technician to put into practical use. There has been no authoritative work on basal metabolism which covered the subject completely and yet in a sufficiently elementary manner to make it useful as a practical text and laboratory manual. This recent manual by Doctors Boothby and Sandiford published "with the hope that the results of indirect calorimetry will not be thrown into general discredit by a neglect of the details requisite for obtaining a true basal metabolic rate," therefore satisfies a real need.

The manual covers the technic of this test in a very clear and detailed manner. It is easily read and understood by the average high-school graduate. It is divided into three sections, the first covering a general discussion of the basal metabolic rate and its clinical application. The second section deals with the details of the technic and contains a complete description of the preparation and treatment of the patient. The gasometer and accessory apparatus and the Haldane gas-analysis machine are fully described. In their discussion of the apparatus the authors have dealt with the assembling of the different parts; the calibration of the gasometer and the Haldane burette; the preparation of the solutions used; and with the care and operation of the entire apparatus. The third section and the appendix cover in detail the calculation of the basal metabolic rate. All of the tables necessary for the calculations are given, with the methods of their computation and directions for their use. Included in the appendix are model forms for the recording in systematic order of the complete determinations.

ALICE GLENESK, B. A.

GENERAL SURGERY. Edited by Albert J. Ochsner, M.D., F.R.M.S., LL.D., F.A.C.S. Practical Medicine Series, 1920, Volume II. The Year Book Publishers, Chicago. Price $2.50.

This volume is one of a series of eight which are intended primarily for the general practitioner. The series covers the literature of the entire field of medicine and surgery for the year prior to publication.

Dr. Ochsner, whose judgment needs no recommendation, has arranged the subject matter most advantageously. He has covered the surgical literature of the past year and has selected those things which are of value and which are novel, and, where occasion demands, has added a note giving his own experience.

The volume should be of particular value to the busy practitioner who desires to keep in touch with the most recent advances in surgery. The references are so arranged that one can readily find the original article in case one desires to study any subject more deeply, and the volume is well indexed.

ROSCOE C. WEBB, M. D.

SYPHILIS. A Treatise of Etiology, Pathology, Diagnosis, Prognosis, Prophylaxis and Treatment. By H. H. Hazen. Cloth, $6. Pp. 647 with 160 illustrations. C. V. Mosby Co., St. Louis, 1919.

It is no small task to write and edit a volume which covers Syphilis both concisely and thoroughly. In "Hazen," however, we have a single volume which is full of information and strictly modern.

Certain divisions are worthy of particular mention.

The entire chapter on pathology is a delight to read, and the halftones are as good as can be made. Most of them are from the collection of Doctors Fordyce and Mackee, of New York.

The chapter on the primary lesion is thorough, while I believe the chapter on the cutaneous lesions might be more detailed.

The descriptions of most of the eye conditions are meagre, but there is mention of the various types of luetic involvement of the optic apparatus.

Congenital syphilis is thoroughly written, while the chapter on treatment is very instructive.

The chapter on serology is excellent.

On the whole the book is an admirable volume,—well printed on good paper with many splendid illustrations. It should be in every private medical library. For the general practitioner it furnishes concise information; for the specialist, information plus a remarkable bibliography.

H. E. Michelson, M. D.

Sexual Impotence. By Victor G. Vecki, M. D. Sixth Edition. Cloth. Price $3.00 net. Pp. 424. Philadelphia: W. B. Saunders Company, 1920.

In this volume the subject is presented very systematically in nine chapters. The first two chapters deal with the anatomy and physiology; the next covers the etiology, followed by a description of the forms of impotence, all of which come under psychic and real, and each has etiologically various subdivisions and combinations.

The condition is difficult to cure, as evidenced by the great number of methods and remedies, any of which may be helpful when judiciously and intelligently applied. There is no specific, no aphrodisiac, so we must rely upon such local and general measures as appear indicated. Great interest and care must be manifested to inspire the necessary hopefulness and confidence of the victim.

This edition is written under the sway of endocrinology, which the author considers one of the hopes of humanity, and he calls attention to the great variation in the theraputic potency of different biologic preparations.

The work is well written, clear, and distinct, and ably considers the subject, giving extensive references to the literature.

G. P. Crume, M. D.

Physiology and Biochemistry in Modern Medicine. J. J. R. Macleod, M. B., Professor of Physiology in the University of Toronto. Assisted by Roy G. Pearce, A. C. Redfield, and others. Third edition. Cloth. Price, $10. Pp. 922, with 243 illustrations. St. Louis: C. V. Mosby Company, 1920.

A third and revised edition within two years of this excellent volume indicates, not only that it fulfills a distinct need, but that its value is increasingly appreciated. Although this treatise is written from the point of view of the medical man, its primary use was not to supplant the more extensive text-books, but rather " . . . to emphasize the application of physiology and biochemistry in the routine practice of medicine . . . by reviewing those portions of physiology and biochemistry which experience has shown to be of especial value to the clinical investigator."

The work is a succinct, reliable and sufficiently complete and fundamental exposition of the physiological problems which are the basis for many of the advances in scientific medicine of to-day. The biochemical problems are approached largely from the physiological point of view, which appears of advantage to the student not deeply grounded in the technic of organic chemistry.

Several valuable chapters on the blood are the work of Dr. Roy G. Pearce; and the entire section on the nervous system has been rewritten by Dr. A. C. Redfield. This edition has been brought well up to date.

Each section is provided with an extensive and selected bibliography of related monographs and articles. The book is well illustrated and clearly and interestingly written.

There are few single volumes coming from the press which have proved to be of equal value to the student or clinician who wishes to approach his problems with the physiological background essential to intelligent and scientific medicine.

Harold Rypins, M. D.

NEWS ITEMS

Dr. C. M. Adkins has moved from Grygla to Thief River Falls.

Dr. J. E. McCoy, formerly of Roseau, is now located at Ivanhoe.

Dr. J. P. Rathbun, of Seneca, S. D., has moved to Windermere, Florida.

Dr. G. H. Lowthian has moved from Fulton, S. D., to Milbank, S. D.

Dr. C. P. Stockdale has moved from Woonsocket, S. D., to Ethan, S. D.

Dr. C. M. Pierson has moved from Ambrose, N. D., to Breckenridge, Minn.

Dr. J. A. Schultz, of Albert Lea, has been doing postgraduate work in Chicago.

Dr. E. E. Wands, of Lisbon, N. D., is in New York City, doing postgraduate work.

Dr. W. Stuart Leech, formerly of Roseau, is again located at Brooten, but only temporarily.

Dr. J. H. Doupe, of Waubay, S. D., is taking an extended course of postgraduate work in Chicago.

St. Vincent's Hospital of Crookston now has an organized staff, of which Dr. Ralph L. Kisch is Chief.

The Southern Minnesota Medical Association will hold its mid-summer meeting in Winona on June 27 and 28.

Dr. J. P. Hiebert, Minneapolis, has moved his office from the Syndicate to the Physicians and Surgeons Building.

Dr. Richard G. Eaton, of Ethan, S. D., has moved to Jamestown, S. D., returning to psychiatrical work in the State Hospital for the Insane.

Dr. R. D. Gardner has moved from Eveleth to International Falls to take up work with Dr. Osborn in the Northern Minnesota Hospital in that city.

Dr. J. C. Serkland, of Rothsay, has returned from California, where he and his wife spent

the winter months. Rothsay was without a physician during his absence.

Dr. Arthur J. Gillette, of St. Paul, died on March 23, at the age of 57. Further notice of this great loss to the profession will be found in our editorial columns.

The United States Civil Service Commission announces a mid-summer competitive examination for an associate in clinical psychiatry and psychotherapy at St. Elizabeth's Hospital, Washington, D. C.

Dr. W. G. Richeson, Sr., of St. Paul, died last month at the age of 84. Dr. Richeson was a Civil War veteran, and had resided in St. Paul since 1870. He retired from practice a number of years ago.

Dr. R. E. Farr, of Minneapolis, read a paper on "Local Anesthesia" before the Brooklyn, N. Y., Medical Society last month, upon invitation. The paper was illustrated by lantern slides and moving pictures.

Dr. Charles H. Keene, formerly physical director in the Minneapolis schools, after doing war service, has been appointed director of health and physical training of the schools of Pennsylvania, with headquarters at Harrisburg.

Dr. E. O. Giere, of Watertown, S. D., was elected vice-president of the Norwegian Lutheran Hospital Association, which held its first annual meeting in Minneapolis last month. The Association represents about twenty hospitals.

Dr. Taliaferro Clark, of the United States Public Health Service, who has been making a survey of the Minneapolis schools, has found much in them to praise. The formal report of his survey will be of interest to all physicians and educators.

There is now under consideration in Minneapolis a union of the nurses' training-schools of the Medical School of the University and the General (City) Hospital, in order to increase the number of pupils entering these schools. The shortage of nurses in the city is acute.

The physicians and dentists of Minneapolis who are interested in a new building have formed a building corporation with the following officers: President, Dr. H. A. Parks; vice-president, Dr. B. G. de Vries; secretary, Dr. Walter MacNeil; treasurer, Dr. A. E. Hedbeck.

The American Medical Association now announces the publication of the Seventh Edition of the A. M. A. Directory, positively, some time this month. The long delay in issuing this edition is a striking evidence of the vast number of changes of location of medical men caused by the World War.

The following men from outside the state will be speakers at the next annual meeting (May 26-27) of the North Dakota State Medical Association: Dr. E. S. Judd, Rochester; Dr. E. L. Tuohy, Duluth; Drs. Warren A. Dennis and Arnold Schwyzer, St. Paul; and Drs. Arthur T. Mann and H. B. Sweetser, Minneapolis.

Dr. Royal N. Chapman, Assistant Professor of Entomology, of the University of Minnesota, delivered a lecture March 15 before an open meeting of the Mayo Foundation Alumni Chapter of Sigma Xi. His topic was "The Significance of Ecological Research in Entomology and Its Application to Certain Problems of National Interest."

The Medical School of the University of Minnesota will give five short courses of special study for general practitioners from May 2 to 28, inclusive. The courses are as follows: (1) pediatrics, (2) obstetrics and gynecology, (3) medicine, (4) surgery, (5) a combined course. The fee in each full course is $30. For a one-week course, it is $10.

As the plans and program of the 1921 Minneapolis Clinic Week take on definite form, it becomes evident that the work done will be very valuable. At least three speakers of national reputation will occupy two afternoon sessions and give the address at the banquet of the Hennepin County Medical Association. Further notice will be found as an editorial on another page.

Dr. Flora L. S. Aldrich, of Anoka, died on March 19, at the age of 58. Dr. Aldrich was the widow of Dr. A. G. Aldrich, who practiced in both Minneapolis and Anoka. She graduated from the Minnesota Hospital College in 1887, and, after doing postgraduate work in the East, began practice in Anoka. She was active in many lines of public work, and was highly respected in both her professional and public work.

The Sioux Falls (Seventh District) Medical Society of South Dakota issues a program of its monthly meeting for an entire year. Its April (April 12th) program is as follows: "Non-Surgical Drainage of the Gall-bladder," Dr. T. J. Billion; "*X*-Ray Diagnosis in Gastro-enterology," Dr. N. J. Nessa; "The Radical Mastoid Operation," Dr. J. G. Parsons. This plan of advance notice of subjects to be discussed is admirable.

Over three hundred medical men attended the

first annual district meeting of the American College of Surgeons held in Omaha, Neb., on March 3 and 4. The standardization of hospitals was the central theme of the meeting. Speakers from the East were present, and a Chicago judge, who spoke at a public evening meeting, made a profound impression, especially when he compared the case-reports of a surgeon with the written decisions of a judge.

The State Medical Society of Wisconsin will celebrate its seventy-fifth birthday by holding a "Home-Coming" meeting in Milwaukee, September 7, 8 and 9, 1921. All former Wisconsin men, whether they have practiced there or left Wisconsin to study medicine, practicing elsewhere after graduating, are invited to this homecoming. The officers of the Society are anxious to secure at this time for mailing purposes the names of all former Wisconsin men. They will confer a favor by sending their names and addresses to Dr. Rock Sleyster, Secretary, Wauwatosa, Wisconsin.

The Interurban Academy of Medicine of Duluth and Superior has extended membership to physicians in Northern Minnesota, Wisconsin and Michigan. The Academy will hold a number of special meetings during the year which will be made attractive to outside members. The first meeting of this character was held on March 16, with an excellent attendance. Clinics were given in the hospitals of the two cities, and a banquet was served. This plan of the Academy will give the physicians of Northern Minnesota, Wisconsin and Michigan an opportunity to become better acquainted and greatly to advance all medical interests.

GOOD LOCATION OR OPENING WANTED

One that will stand thorough investigation in Minneapolis, Albert Lea, or a thriving railroad county-seat town, with hospital or suitable for one, in Minnesota, Wisconsin, or South Dakota, but will consider any good location anywhere. Address 124, care of this office.

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This machine has new tires and is in excellent mechanical condition. It is especially adapted to a physician's work. For sale by a Minneapolis physician. Priced for $750. For further information, address 123, care of this office.

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An excellent opening in a German-speaking community in Southern Minnesota for a physician to work in connection with a group in a nearby town with excellent hospital facilities. Nothing to buy. Financial aid, if needed, will be given to right man. Address 121, care of this office.

ASSISTANTSHIP OR PARTNERSHIP WANTED

Wanted, assistantship to, or partnership with, a busy city physician or surgeon. Desire a permanent proposition with facilities for real scientific work. Graduate Class A University; in general practice eight years; married; good health; and can stand a lot of work. Address 122, care of this office.

PRACTICE FOR SALE

A country practice in a village of 400; good farming community. Practice pays $4,000 annually without surgery. Collections A-1. Am retiring on account of health. Will vacate immediately in favor of the purchaser of my office equipment. Address 115, care of this office.

ASSISTANT PHYSICIAN IN MINING CONTRACT PRACTICE IN MINNESOTA WANTED

Must be graduate of Class A college, and have had hospital experience. Salary $225 to start. Early increase to right man. Give full information in first letter, with photo. Address 116, care of this office.

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INSTRUMENTS, BOOKS, AND FURNITURE FOR SALE

The instruments, books, reclining chair, couch, and desk and chair of the late Dr. F. J. Duggan, of Grand Forks, N. D., are offered for sale cheap. Address Mrs. F. J. Duggan, 321 No. Third St., Grand Forks, N. D.

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Fortunate, indeed, is the tuberculous patient who finds a home in this institution, and with it the certain hope that if his or her disease is curable, it will here be cured.

The literature of the sanatorium is interesting and valuable, and is obtainable upon request.

RIVER PINES SANATORIUM

The River Pines Sanatorium, located at Stevens Point, Wis., stands very high among the institutions of this country devoted to the care of the tuberculous. Our readers have sent many patients to Stevens Point, and all of these doctors, especially those who have visited the institution one or more times, speak highly of it from every standpoint. Its work is indeed highly satisfactory to both physicians and patients.

The Sanatorium has long carried a card in our advertising columns, and at present a series of very interesting points on the relation of the sanatorium to tuberculous patients, constitute these announcements. They are such points as will interest every physician.

Dr. J. W. Coon, the Medical Director, invites from all physicians, correspondence upon any phase of institutional work. He may be addressed at Stevens Point, Wisconsin.

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COLLECTIONS

Every physician should know exactly which of his accounts should be collected. The unfortunate man is never pushed by a physician; the man who can, but will not, pay his doctor's bills, should be made to pay. It takes an expert, or perhaps a group or clinic of experts, to collect some bills.

An association of experts has been organized in Minneapolis to collect such bills exclusively for physicians, dentists, and hospitals. It is known as the Physicians and Surgeons Association, and it has offices at 827½ Nicollet Avenue. It solicits the accounts of our readers.

THREE INTERESTING ITEMS

A new tablet of hexamethylenamine is on the market that possesses advantages over the regulation five and seven and a half-grain tablets in that it is quickly soluble in water, while the ordinary tablets require a long time to dissolve. These new tablets are called Hexaloids and bear the Lilly label.

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ANESTHETICS COMPARED

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The showing is interesting so far as it goes, but further, when considering the two best anesthetics, one must know that procaine is only about one-seventh as toxic as cocaine. Also, it is less irritating. That is why careful operators prefer it. As between the two, nobody mindful of the mishaps chargeable to cocaine, will hesitate a minute questioning which to use.

Procaine (introduced as novocaine by alien patentees) is now made by The Abbott Laboratories, Chicago. They offer both tablets and ready-prepared solutions in ampules. Those interested should write for the new 1921 price list now being mailed out by the company. An 18-page booklet covering the application of procaine in minor surgery is also available on request.

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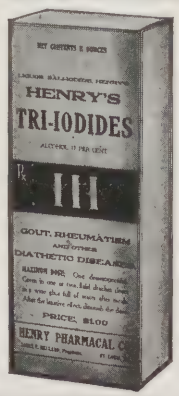
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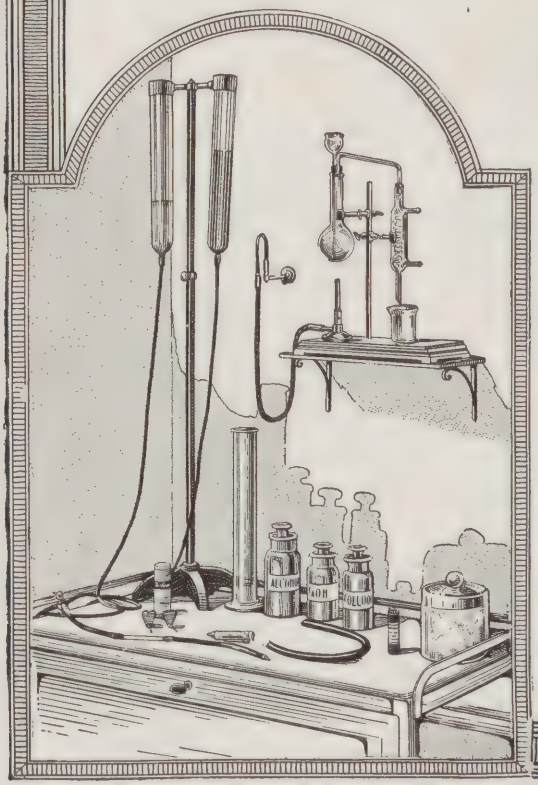
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PATHOLOGIC CONDITIONS OF THE DUODENUM*

BY EDWARD S. JUDD, M.D.
Mayo Clinic
ROCHESTER, MINNESOTA

The duodenum occupies a very important anatomic and physiologic position just distal to the stomach. The upper third almost seems to be a part of the stomach; at least, it is intimately associated with it and with the mechanics of emptying the stomach. The duodenum is an important organ physiologically because the secretory ducts of the liver and pancreas discharge into it, and because it has a secretion of its own and contains the Brunner's glands which are not found in any other part of the body. It has been shown that in cases of acute intestinal obstruction the grave manifestations and death are usually due to the absorption of toxins formed in the duodenum, which in very small amount will cause the death of an animal.

In spite of this apparent great importance of the duodenum Mann and Kawamura have recently shown that many animals seem to exist as well after removal of the duodenum as before. Their experiments were undertaken in order to determine the part of the duodenum in the function of the gastro-intestinal tract, and particularly whether or not the duodenum is essential to life. Previous investigators had removed the entire duodenum, but usually in connection with a study of the function of the pancreas and diabetes. Mann and Kawamura removed the duodenum from the cat, the dog, the hog, the goat, and the monkey. At the time of the report a careful study of the results in the dog had been made. The detailed examination of the blood showed that changes had not occurred after removal of the duodenum. A röntgenologic examination of the gastro-intestinal tract after a barium meal gave practically the same findings as in a normal dog. Many of the duodenectomized dogs lived for a number of months in good health and then died from other causes.

Parts of the duodenum have been removed from the human being during surgical procedures with no ill effects, but, so far as I know, the entire duodenum has never been removed. It is not likely that an indication will arise for the removal of this organ, but it is interesting to know that it is not essential to life and comfort.

DILATATION

Under normal conditions the duodenum maintains a fairly normal position, shape, and size, but under some conditions it becomes greatly dilated throughout its entire length. The dilatation is diffuse, beginning at the pylorus, extending through the duodenum and usually into the upper part of the jejunum. The lumen becomes many times greater than normal, and the wall of the intestine is thickened and often it seems to be edematous. A satisfactory explanation of the etiology of this condition has not been offered, I believe. In the three pronounced cases that I have observed I was unable to find any cause of a mechanical nature. The dilatation gradually faded out into a normal sized and normal appearing intestine. We could not learn whether pare-

*Presented before the Minnesota Pathological Society, Minneapolis, February, 1921.

sis interfered with the normal peristalsis or some infection involved the musculature. Similar conditions which have been reported shortly after abdominal operations were most likely due to a mild degree of infection or toxemia. The clinical manifestations of dilatation are those of an incomplete obstruction of the upper tract. The diagnosis is usually made by means of the Röntgen ray after a barium meal; in some cases visible peristalsis is well marked. This symptom was very noticeable in a case in which I operated recently.

Case 344096—Mrs. R. G. S., aged 64, was brought to the hospital in an ambulance and seen in consultation December 18, 1920. She complained of an abdominal tumor and the sensation of constriction about the waist-line. In January, 1920, she had begun to have



Fig. 1.

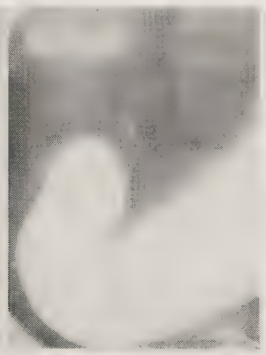


Fig. 2.

Fig. 1 (Case 333574). Dilatation of the duodenum due to obstruction about 10 cm. from the pylorus; obstruction may have been due to carcinoma.

Fig. 2 (Case 207423). Obstruction of the first part of the duodenum which may have been due to carcinoma.

frequent urination, polydypsia, polyuria, and burning sensations over the entire body, particularly at night. The daughter stated that in August, 1920, her mother had had symptoms simulating apoplexy; she was stuporous, had difficulty in talking, and urinated involuntarily; she did not have fever or diplopia. She had lost a great deal in weight and was very emaciated.

The heart had a blowing systolic murmur. A mass could be palpated in the upper abdomen. The left broad ligament was somewhat indurated. A small inflammatory nodule was palpated on the rectal wall posteriorly. The urinalysis was negative. The hemoglobin was 80 per cent. The Wassermann test on the blood was negative. Parasites could not be found in the stools, but a few red-blood cells were present. Röntgenograms of the stomach, the colon, and the chest were negative, with the exception of a small calcified area in the lower portion of the left lung.

The patient was operated on January 12, 1921. The only pathologic condition found was enlarged glands in the mesentery at the duodenojejunal angle. A gland was excised and later reported to be inflamed. The intestine, however, was found to be greatly dilated from the juncture of the upper and middle thirds of the duodenum to about half way through the jejunum. Intestinal peristalsis was spastic; the intestine felt like a hard rope after the peristaltic wave had passed through. A lateral side-to-side anastomosis was made between the upper end of the jejunum and the beginning of the ileum. The mass proved to be dilated small intestine.

The patient's convalescence has been uneventful. She left the hospital the fourteenth day. She has gained in weight, and her general health is much improved.

The following case shows marked dilatation of the duodenum caused by obstruction at the duodenojejunal angle by an inflammatory mass.

Case 336859—Mr. W. N. G., aged 70, was examined at the Clinic October 8, 1920. He had had attacks of indigestion and bilious spells since the age of sixteen. He stated that he had been in his usual health

Fig. 3.

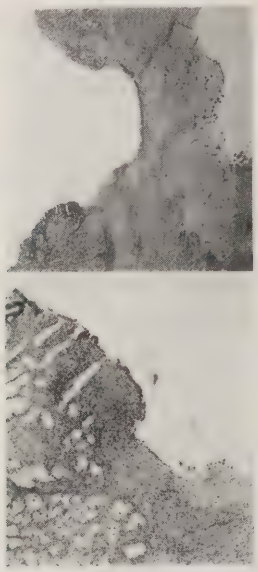


Fig. 4.

Fig. 3 (Case 299268). Ulcer of the duodenum.

Fig. 4 (Case 299268). Duodenal ulcer showing juncture, base, and border.

until, eight weeks before examination, he began to have sour stomach, regurgitation of sour water, and much gas. One week later he began to have a dull, heavy feeling in the abdomen; vomiting relieved it for from four or five days to a week. Blood was not noted in the vomitus. On account of the symptoms the patient confined his diet mostly to bread and milk. His bowels were regular, and he had had no urinary disturbance. He had lost ten pounds in weight.

The abdominal wall was so rigid that palpation did not reveal anything. Gastric lavage showed a retention of 150 c.c. of odorless yellow material and potato eaten the previous day. The urinalysis was negative. The hemoglobin was 75 per cent. A fractional test-meal showed a total acidity of 24, free hydrochloric acid 12, greenish remnants of meat and vegetables, and blood 1 on a scale of 1, 2, 3, 4. The röntgenogram showed a large stomach with retention 2 on a scale

of 1, 2, 3, 4, and marked dilatation of the duodenum with obstruction about 15 cm. from the pylorus.

At operation, November 24, 1920, a small scirrhous tumefaction at the duodenojejunal angle was found to have produced such marked obstruction that the retroperitoneal duodenum was many times normal size. The glands in the mesentery were enlarged; one was excised and reported by the pathologist to be inflammatory. The tumor was firmly attached posteriorly. Evidence of metastasis could not be found. A duodenal ulcer immediately below the pylorus held the pylorus partly closed. A duodenojejunostomy was made; the retroperitoneal duodenum, which was markedly dilated, was joined to a free piece of jejunum by means of lateral anastomosis. Then pylorectomy and gastroduodenostomy were made. Tissue from the pylorus was reported to be simple ulcer.

The operative result was satisfactory, but the patient's convalescence was complicated by the development of an abscess in the lung from which he is making a spontaneous recovery. The tumor may have been a scirrhous carcinoma, but it felt more like an inflammatory lesion. It was different from anything that I had observed before.

Fig. 5.

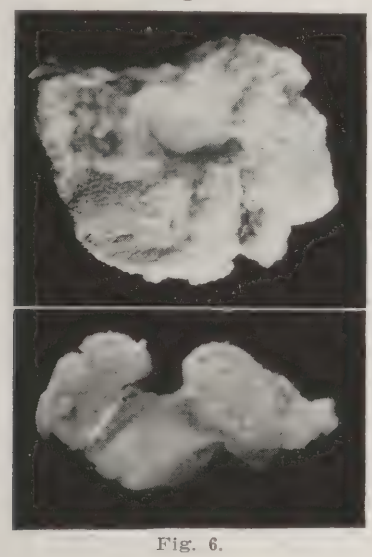


Fig. 6.

Fig. 5 (Case 197002). Duodenal ulcer.
Fig. 6 (Case 116897). Section of duodenal ulcer.

DIVERTICULUM

Diverticulum occurs rather often in the duodenum. In most instances it is acquired and is produced by the contracting scar of an ulcer. In many persons pouches form in the duodenum, and in some persons these pouches become true diverticula. Congenital diverticula occur also, although less often, and usually they are associated with ulcer. The opening of the diverticulum in the congenital case is said to be most often on the pancreatic side of the duodenum and only a short distance below the pylorus. In many cases symptoms are not produced, I believe, but in some cases the symptoms are similar to those from ulcer, except that the pain is not relieved by food. Under these circumstances it is necessary to remove the diverticular sac. Interesting cases of diverticulum of the duodenum have been reported by Ritchie and McWhorter and one recently by Moore. I have seen many cases of pouching and sacculation of the duodenum associated with ulcer and not associated with ulcer, but in my experience a true diverticulum of the duodenum is extremely rare.

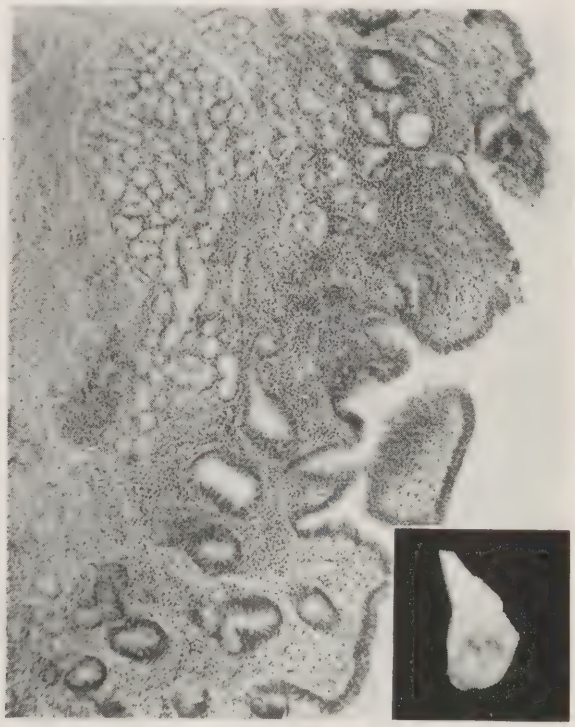


Fig. 7. Fig. 8.

Fig. 7 (Case 156246). Duodenitis; lymphocytic infiltration. Mucous membrane practically intact.
Fig. 8 (Case 156246). Gross specimen, duodenitis.

ULCER

Ulceration in the duodenum occurs frequently. From 1906 to 1921, 4,901 operations for ulcer of the duodenum were performed in the Clinic. Wilkie found 41 cases in 490 routine necropsies. Undoubtedly, these ulcers may occur without producing sysmptoms. Gruber once stated that 75 per cent of the duodenal ulcers found at necropsy were not diagnosed during life; at that time the so-called silent ulcer was believed to occur more often in the arteriosclerotic patient. Undoubtedly, the silent ulcer and failure to diagnose ulcer do not occur so often now as formerly.

It is rather unusual that our knowledge of ulcers in the duodenum should have been obtained by the surgeon from his study of conditions at the time of operation and not from post-mortem examination. Only after some time and much discussion the European pathologists agreed with the English and American surgeons that ulcer occurs in the duodenum and that it occurs there more frequently than in the stomach.

Ulcer of the duodenum may be present at any age, although it is most frequent during middle life. It occurs four times as often in males as in



Fig. 9. Fig. 10.

Fig. 9 (324015). Duodenitis; lymphocytic infiltration. Mucous membrane practically intact.
Fig. 10 (324015). Gross specimen, duodenitis.

females. If the ulcer is on the anterior surface it is always visible and, in certain instances, can be palpated. In many instances it will be found on the anterior surface near the upper border. In more than 90 per cent of the cases the ulcer occurs in the first inch of the duodenum. As long as gastro-enterostomy was performed in all the cases and the ulcer or the duodenum was not disturbed it was difficult to get a good idea of the lesion. Now that the duodenum is more frequently explored by an incision and the ulcers excised more often our ideas of the pathologic condition have changed. We have been surprised to find multiple ulcers so often. A posterior ulcer was found in nearly half of the cases in which we excised an ulcer from the anterior surface, from which fact I believe that multiple ulcers occur in more than 10 to 20 per cent of cases. Also, since a search has been made for ulcer on the deep surface several inches from the pylorus many have been found at this point. In several cases we were unable to see or feel any deformity until an incision was made in the anterior surface of the duodenum. In palpating and examining the duodenum for an ulcer we must keep this point in mind and before it is decided that an ulcer does not exist, especially in cases in which there is a good clinical history for ulcer or positive röntgen-ray findings, it may be necessary to open the duodenum and explore from the inside. I am sorry to say that we have overlooked these ulcers sometimes only to find them at a second operation. We have had two or three cases in which the ulcer was at the ampulla of Vater and was producing an obstruction at the end of the common duct with complete retention of bile and deep jaundice. Fortunately, these cases are rare, since they are usually not good surgical risks because of the deep and unusually long-standing jaundice. In spite of the fact that nearly all ulcers occur within one inch of the pylorus, in many cases the duodenum is so fixed and mobilized with such difficulty that it is not always easy to determine the exact pathologic condition and often best not to attempt to remove the ulcer.

Since we have made a more careful macroscopic and microscopic study of the tissue in the ulcerated area the ulceration has been found in two distinct forms. In the first the lesion is a true ulcer and in every way similar to ulcer in the stomach. There is definite congestion and stippling of the peritoneal coat, and usually the induration is rather extensive so that the lesion can be palpated and recognized as an ulcer with a crater. In the second type the congestion and stippling on the surface of the duodenum are also present, often more marked than in the true ulcer type, but usually very little if any induration is to be made out in the tissues. In many cases palpation of the lesion is not different from palpation of any other part of the duodenum. On excision instead of finding a crater, as in the first type of ulceration, we find that the entire surface of the mucous membrane appears to be covered with normal mucosa and might be called a healed ulcer if it were not producing symptoms. The entire thickness of the ulcerated area of the duodenum is very little if any greater than that of

the normal duodenal wall. If the surface of the mucous membrane is examined very closely it may be found to contain one or more of these pin-point ulcers. Both the submucosa and muscularis are usually infiltrated with round cells, and this infiltration may extend some little distance into the tissues of the wall. To distinguish this type from the true crater-ulcer we have called it the duodenitis type of ulceration or the submucous ulcer. Histologically it is similar to the submucous ulcer sometimes found in the urinary bladder. Clinically there does not seem to be much difference between the two types. The histories in our 64 cases of duodenitis indicate that this type of ulceration is not a stage from which a true ulceration later develops. The duration of symptoms in the cases of duodenitis averages the same as that in the true ulcer cases. Hemorrhage rarely occurs. The shadow of the deformity of the duodenal cap in the röntgenogram produced by the two forms of ulceration is the same except that the niche which represents the crater of the ulcer is never seen in the ulcer of duodenitis, but is frequently seen in the true ulcer type. Designating these two types of ulcer of the duodenum has no bearing on the diagnosis or treatment, of course, but it is of some interest from the pathologic viewpoint and possibly later may help some in the study of the etiology.

The results of the long-standing existence of either type of ulcer seem to be the same. The lumen and contour of the duodenum become more and more changed. The contractions of the scars cause puckering of the walls and often a stellate contraction, which draws in several areas of the edges at the same time. Frequently, as a result, pouches and diverticula form. Later, stenosis causes obstruction, which may increase until it is complete; in a few instances the duodenum has been severed completely as a result of the scar. The surrounding structures may become involved, such as the common duct, the ampulla, and the portal vein, but fortunately these complications are rare.

Acute perforation may occur into the abdomen. In operating in these cases I have been impressed with the great amount of edema and induration throughout the entire duodenal wall, even when the perforation had occurred only a few hours before, and possibly when there had not been any severe abdominal symptoms before. In these cases the perforation is often large enough to admit the end of a finger. So-called chronic perforations, which are undoubtedly a slow leak from a minute opening, occurred in 28 per cent of all our cases of duodenal ulcer; perforation occurred into the pancreas in 17 per cent of these. As a result of perforation communications may be formed with the gall-bladder, the colon, or the stomach.

Hemorrhage from ulcer of the duodenum is common and sometimes very severe. It may be the first indication of the existence of an ulcer. Hemorrhage rarely occurs with duodenitis and ulceration. Chronic bleeding in these cases is not so common as sharp, severe hemorrhage.

CARCINOMA

Primary carcinoma or neoplasm of any kind is extremely rare in the duodenum. In spite of the fact that ulcer is so common that we might imagine that carcinoma would occasionally occur, primary cancer of the duodenum that in any way simulates ulcer is practically unknown. In 1918 I reported a series of cases of primary carcinoma in the small intestine. During a number of years we operated on practically 1,700 patients for primary carcinoma of the stomach and on nearly 1,800 patients for carcinoma of the large intestine. During this interval we observed only 22 cases of primary carcinoma of the small intestine; 5 of these occurred in the duodenum. Furthermore, when I studied these cases more carefully I found that it was impossible to make certain that some of them really were primary small intestinal tumors. Of the five duodenal tumors not one was a clear-cut primary carcinoma such as is observed in other parts of the gastro-intestinal tract. If we could bring about a condition in other parts of the body similar to that which exists in the duodenum we might offer some prophylaxis against malignancy in other regions where it is so common.
1-10.)

CONCLUSIONS

1. The experiments of Mann and Kawamura seemed to prove that the duodenum was not essential to life or physiologic function in animals from which they removed the duodenum. The practical significance of this is, that any part of the duodenum may be removed or put out of function during an operation without difficulty arising as long as provision is made for the pancreatic duct and the bile duct.

2. Dilatations of the duodenum occur in a diffuse form and as diverticula, congenital and acquired. Diffuse dilatations and congenital diverticula are extremely rare, but acquired diverticula and pouchings, which result from the scarring of an ulcer, are common.

3. Ulcer occurs in the duodenum in two distinct types. The clinical syndrome and the Röntgen-ray findings are much the same in the two types. In one type the ulcer has the appearance and the histologic characteristics of ulcer of the stomach; this we have called true ulcer. In the other type the ulceration differs grossly; there are not the same induration and crater formation, and it is often difficult to feel the ulcer, since the mucous membrane covers its entire surface. Due to the evidences of inflammation in the other tissues of the duodenum, we have called this type duodenitis, or submucous ulcer.

4. Carcinoma, sarcoma, or any neoplasm is extremely rare in the duodenum. Occasionally carcinoma occurs, although it is not encountered often enough to be of surgical importance.

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THE PROFESSIONAL MALINGERER

By Arthur Sweeney, M.D.
SAINT PAUL

By what strange processes people strive to make a living! To pretend an illness as a means of gain seems to be most illogical; yet when reward is easily secured by this method it is not surprising that many play this game. When one sees his fellow-worker receiving large compensation in settlement of gross exaggeration of a trivial injury there is a strong temptation to the unscrupulous to imitate. Settlement of claims that have no foundation, under the mistaken policy that it is better to pay a small amount than to risk a large verdict, has given rise to a class of claimants that become professional malingerers.

The number of malingerers is very large, larger than is at first apparent. They begin their careers by claims for small amounts for slight injuries. Successful in these petty frauds, they migrate from one part of the country to another, and, either as passenger or employé, become so proficient in deception that they gradually assume more serious forms of disease, and at times receive large settlements for alleged incurable injuries to the spinal cord. The conditions preferred by them are such as present mainly subjective symptoms. Strains to the muscles of the lumbar region, sacro-iliac injury, trauma about the shoulder-joint, concussion symptoms, and "traumatic neurosis" form the repertory of these malingerers. Pain is not to be measured by objective methods, and is most easily assumed in connection with these conditions. Allegations of these types of injuries find easy credence and are hard to disprove. Juries are sympathetic, as well as ignorant of pathology.

The success of the professional malingerer is due to several factors, which work harmoniously together. There is usually a smart and unscrupulous crook, a convenient liability, a careless doctor, a lawyer with an easy conscience, and an easy-going claim department. Where these factors are happily combined, the problem of making a living without work is solved.

The successful malingerer is undeniably smart. His brilliancy shows itself most often in a succession of small claims for temporary disabilities. He is usually too wary to allege severe types of injury which will entail long confinement in hospitals, protracted negotiation, and bitterly fought law-suits. He prefers convenient but temporary disabilities of the shoulder-joint, or injuries to the sacro-iliac joint. These can be settled out of court for sums in the neighborhood of a thousand dollars, and if he is reasonably active he can work out three or four such claims in a year. Flushed with success, he sometimes becomes ambitious and alleges severe spinal paralysis, and, while occasionally securing large damages, the greater the claim the greater is the chance of detection.

They are very adroit in selecting the method of injury. If posing as passengers in public vehicles they slip on icy steps, stumble over baggage in the aisles, are thrown down by sudden jolting of cars, or alight in the dark on defective platforms. If acting as train-men, they fall from freight cars because of defective grab-irons, defective brake appliances, or are swept off the sides of cars by cars on adjacent tracks. Any unusually severe jolting of cars in the operation

of switching affords a convenient reason for their accidents. There are usually few witnesses to the accidents. They are aware that as employes any violation of the safety-appliance act operates to their benefit.

The careless doctor contributes as largely as any other factor to the success of the malingerer. Examinations of the injured men are perfunctory. With childlike credulity he accepts without question the statement of the claimant as genuine, however devoid of reputation for veracity he may be. Subjective complaints are received by him with the same bland belief as objective symptoms. No complete or comprehensive examination is made, and no proper case-record is made by the doctor. At the trial of the case the charts of the hospital, containing scanty records made by nurses, throw practically no light on the history of the case while in the hospital. The records of the physician consist of a few very perfunctory replies to questions in the claim agent's report, which are in no sense descriptive of the injuries or affording information of the daily progress of the case. When the malingerer leaves the hospital and gets into the hands of a doctor of his own selection, he sees to it that his symptoms are properly recorded and kept in mind by the physician for the purpose of settlement or trial of the case. For the first time a competent examination is now made, with the scene set in favor of a severe and permanent injury. It is perhaps not true that doctors lend themselves willingly to favor the plaintiff's side of the case, but the plaintiff himself is able to see to it that the worst side of his case is properly set forth, and he is able to persuade the credulous doctor of the genuineness of his claims. The railroad doctor is usually very careless at the beginning of the case, and the plaintiff's doctors are over-persuaded and prejudiced at the finish.

The less said about the dishonest lawyer the better. He has received all the notoriety that is necessary. He is human and, like many human beings, cannot resist the temptation of easy money. The system of fifty-fifty contracts with the injured stamps them as wholly mercenary, and renders further comment unnecessary.

Easy-going claim departments render the work of the malingerer free from serious difficulty. Their problem is to decide for the advantage of the corporation whether to settle or to fight a given case. If there is an undoubted liability they will have to pay something. In most cases a liability is present, and, unless there is some special indication in the medical report that the case is a frame-up, they can presume with reason that there is no prospect of fighting it with success. The question in any event arranges itself into a decision as to the cost of trying the case. If the claim of the malingerer is not excessive the natural tendency is to settle the case. The two questions that are considered are how much will it cost to contest the claim, and what would a jury probably award in case of an adverse verdict? The question of fighting a false claim on principle seldom is considered except where the amount of damages claimed is decidedly exorbitant. Much can be said in favor of this method. It is a relatively cheap way of disposing of troublesome cases. It apparently works out advantageously in the financial statement at the end of the year. Yet it is a question whether this method does not encourage dishonest claims and does not, in the long run, react to the disadvantage of the railroad.

If there is any criticism of claim departments that may be said to be free from dispute it is in the utter lack of organization of their medical force. There is not proper medical investigation, and there is a woeful lack of system in the matter of reports. Moreover, sufficient care is not exercised in the selection of competent medical men. Almost any doctor is regarded as good enough to handle railroad cases. The absence of reports that are descriptive of the early days of the patient's stay in the hospital proves to be a fatal omission at the time of trial of the case. A proper organization of the medical department and the establishment of a competent system of reports will obviate a great deal of trouble, and will permit the claim departments to know what cases have merit and what have not.

Upon the incompetency of the medical staff of railroads depends largely the success of the professional malingerer. In my experience very simple and well-known tests only are necessary to determine the question of malingering, but in most of the trials in which I have participated there have been incredible carelessness and lack of ordinary intelligence on the part of the examining physician.

I have had some rather intimate contact with professional malingerers. I have always found their symptoms and pretensions to be so discordant with those present in actual injury that no difficulty was experienced in rapidly revealing the falsity of their claims. The cases which I report represent only a few of the more startling instances of fraud, but there are many other

pretenders of meaner ability who shall remain unheralded and unsung.

The Coomers case attracted considerable attention in local railroad circles by the smoothness with which a malingerer defrauded several roads out of large sums. I saw him first in St. Joseph's Hospital, where he had been for three months under treatment for paralysis of the left side of the body. His story was that, while employed as a laborer in loading a freight car, one of the rungs of an improvised ladder, which extended from the ground to the door of the car, broke and precipitated him to the ground. There was a slight abrasion over the left mastoid as the only sign of trauma. He was taken to the hospital in a stuporous condition, and next day it was found that he could not move his left arm or leg. He was regarded as permanently injured, and a settlement had been arranged for a sum in excess of ten thousand dollars, with transportation to Kingston, Jamaica, where he was to join his wife and three children.

When I visited him in the hospital he appeared to be a rather well-educated man, of good manners and convincing language, but there were several inexplicable features presented by the symptoms. He kept his right eye tightly closed and said he could only open it with his fingers, and that when it was open everything looked red. When asked to protrude his tongue he pushed it with force to the right side of his mouth. Further examination showed that his left arm was rigidly extended with the hand and fingers in a position of extension. The leg was similarly extended, and could with difficulty be bent. All reflexes were normal. There was loss of sensation of the leg as far as the navel and in the arm to the shoulder. The upper limits of the anesthesia were variable over a distance of four inches. Of course the diagnosis was evident. No spinal or cerebral pathological condition could produce his complex of symptoms, and my report that he was a faker at once disarranged the settlement, and the case, after some delay, came to trial.

During the cross-examination his previous history came to light. He was first injured on the Cotton Belt road in 1910, his symptoms at that time being identical with those in the present case. He settled for $2,000. Two years afterward he turned up in Little Rock, Ark., with a similar condition, and settled with the Rock Island road for $5,000. A condition of this settlement was that he should be provided with transportation to join his dear wife and little ones at Bear Creek, Alaska. The situation of Bear Creek involved a journey through Behring Straits, around the north coast of Alaska, and up the Mackenzie River to the point where it was joined by the aforesaid creek. When he reached Vancouver on this long trip he found that he could not cash the check which he had received, and, therefore, had to return with his nurse to Little Rock, where he received his money and disappeared. His next accident was at Pocatello, Idaho, where he alleged he was squeezed between a freight car and the side of a tunnel. He was again paralyzed, and settled with the Milwaukee road for $4,500 and transportation, in charge of a nurse, to join his dear wife and little ones at Union, Ind. His journey was without incident until Chicago was reached. He was conveyed from the train to the waiting-room of the station in a wheel-chair, and he sent his nurse across the street to a drug-store for some medicine. When the nurse returned he had no difficulty in finding the wheel-chair, but the paralyzed Coomers had disappeared.

His next appearance was in St. Paul. During the trial so much evidence of fraud and malingering was brought out on cross-examination that his attorney deserted him, and the case was dismissed. Coomers was taken to the City Hospital as a public charge after his abandonment by the attorneys. He was so smooth in his representations of helplessness and so plausible in his statements that the ladies of a charitable society became interested in his case. To enable him to reach his dear wife and little ones, now no longer at Kingston, Jamaica, but miraculously transferred to Indiana, the ladies provided him with a ticket to Chicago and telegraphed to a similar organization to meet him on the arrival of the train and forward him to his destination. He never reached Chicago. At some station en route he disappeared. Perhaps he will again show up as a paralyzed claimant in some distant place, and continue his career as a professional malingerer. Certainly he should be encouraged by the ease with which he collected $11,500 in a few years from credulous railroads with the aid of still more credulous and careless physicians.

One of the most dangerous and persistent malingerers I have ever met is known by the name of J. R. Hull and fourteen other nom de plumes. I first met him in 1916. After his attorney had arranged a settlement of his claim against the Northern Pacific Railway for $20,000 in payment of a permanent paralysis, the result of a broken back, he came to my office on

crutches, dragging his left leg behind him, and told me his story with an air of veracity and honesty. He was apparently particular not to overstate his case, and entered into candid explanations to substantiate his claims. He could "talk the birds off the trees," so fair, truthful, and scrupulous was he in his description of his troubles. He claimed to have been injured by falling off a freight car at Northtown Junction. He was picked up unconscious, taken to the Northwestern Hospital for three weeks, and was transferred to the Northern Pacific Hospital at Brainerd, where he remained for six weeks. A diagnosis of fractured spine with permanent paralysis of the left leg was made, and the terms of settlement had practically been agreed upon when he was sent to me for examination.

My examination showed that he presented absolutely none of the signs of organic spinal paralysis, and not even any of the classical signs of functional disease. His anesthesia involved the foot as far as the ankle, and the thigh from the knee to the navel level. The outline of anesthesia was variable in all tests. His reflexes were perfect, and there was no atrophy. He dragged his leg in such a manner that the toe of his shoe was almost worn through, a gait that is never seen in organic paralysis. In testing his ability to move the leg I had him lie flat on his back and placed my hands under his heels. When I told him to elevate the sound leg there was marked counter-pressure with the heel of the paralyzed limb. When I asked him to elevate the paralyzed leg there was absolutely no counter-pressure with the right heel. This test is absolute in that it demonstrates the intention to deceive on the part of the claimant. In consequence of my report a settlement was made for a sum trifling in amount, compared with his original claim. Twenty-eight days afterward he had secured employment on the N. Y., N. H. & Hartford R. R. and collected $175 on a claim of injury, and in less than two weeks later he was paid $75 by the Boston & Maine R. R. for falling against a switch stand.

On January 17, 1918, while employed as a brakeman on the Denver & Rio Grande R. R., he claimed to have fallen from the top of a box-car while he was releasing a brake at Thistle, Utah. He soon discharged the company doctors, and in about a month brought suit for $75,000, alleging that he had sustained permanent injuries resulting in paralysis of both legs from the waist down. During the year that elapsed prior to the trial of the case in March, 1919, he appeared daily on the streets of Salt Lake City, selling papers in a wheel-chair, a pathetic object that aroused the sympathy of the passers-by. The claim was investigated by Mr. Adam Darling, General Claim Agent of the road, with wonderful patience and thoroughness, eliciting evidence which upon the trial showed Hull to be a most accomplished malingerer, whose operations had extended from the Western to the Eastern coasts. From 1902 to 1918 he had been employed upon over thirty railroads, from most of which he had received compensation for injuries in varying amounts. In nine of them he claimed injuries to the back, with symptoms more or less similar to those which he alleged in his complaint. In four instances he had brought suits in which he alleged permanent injuries,—total disability and paralysis. His history, as revealed on the trial, was one long period of suffering from alleged accidents. In no case had he worked long on any road before presenting a claim for damages. He appears to have been generally successful, though the amounts he received as compensation were relatively small. At Salt Lake City he was playing for large stakes, and had surrounded himself with lawyers and doctors who were prepared to go to the limit in substantiating his claim. It is much to the discredit of the medical profession that he was able to rally to his unjust claim physicians of fair repute who were willing to interpret *x*-ray plates as showing spinal fractures which did not exist, and who testified to the permanent character of his paralysis.

As he appeared in the court-room, he walked with a pair of crutches, dragging both legs in the same absurd manner as in St. Paul, and presented a pitiful appearance to the eye of the unsophisticated juryman.

The public is usually sympathetic in cases of personal injury claims where the plaintiff's appearance confirms his statements of suffering, and while his case was being presented this appearance of pain and disability had marked effect upon the jury. When, however, the whole history of his life was revealed, in reports under his own signature, in the long list of fraudulent claims of permanent injury in so many different railroads, and in the testimony of many claim agents who had been deceived by him, the sympathies of the jury disappeared, and, convinced that Hull was a professional malingerer, they promptly brought in a verdict for the defense. The justice of their verdict was demonstrated by the fact that the month following the verdict he

was seen in Carson City, Nevada, walking about the streets with no apparent limp or evidence of paralysis and minus his wheel-chair and crutches.

Malingering is so common, and physicians are so credulous, that it would be easy to illustrate this paper by dozens of strange cases within my experience. I cannot refrain from mentioning one case which had a fortunate termination before it came to trial. A few years ago an attorney, acting on behalf of a man who had been injured by a fall from a box-car by reason of a defective grab-iron, asked me to examine his client, and accompanied me to the room where the injured man had been for three months confined to bed by paralysis of both legs. The claimant was a stout, heavily bearded man whose pale complexion showed that he had been indoors for months. He complained of intense pain in the back, paralysis of both legs, paralysis of the bladder, and loss of sensation in the legs. Examination showed no atrophy, no abnormal reflexes, no sign of urinary incontinence, or other changes indicating an organic disease. Anesthesia to touch and pain was present as far as the knees, but it was of the stocking type and did not follow the usual distribution of the cutaneous nerves. He professed to be unable in the slightest degree to move a muscle in his legs or feet. After vainly endeavoring to get him to move his toes I lifted his leg, supporting it at the calf with my left hand, while with my right hand I tapped his foot, urging him to move his toes. "I can't do it, Doc," was my only reward. Without his observing what I was doing I withdrew the support of my left hand from his calf and continued to tap his foot and urge him to move his toes. I received the same reply until I called to his attention the fact that he was still holding his leg up in the air. He let it drop suddenly. I told him he was a faker and left the room.

A few minutes afterward the attorney was accosted on the street by the claim agent of the road, with the statement that I did not think much of his client. After some argument the claim agent asked the attorney if he wanted to see his client walking. The challenge was accepted, and at eight o'clock in the evening the attorney was led to the apartment immediately above that occupied by the alleged paralytic. In this room a few boards had been lifted from the floor, the laths of the ceiling had been burned away with a hot iron, and the plaster scraped off, so that only the paper of the ceiling separated the claimant from the observing eye of a detective. This had been carefully cut with a knife so as to form a flap which could be depressed enough to reveal everything in the room below. After waiting a short time the attorney saw his client throw off the bed clothes, hop out of bed, walk up and down the room, and then sit at the table and play a game of cards with his wife. The attorney, who had been honestly deceived by his client, called upon him next day and in chosen English expressed his opinion of his morals, character, and ancestors, and only to be met with the nonchalant reply, "If that's the way matters stand I might as well go out and get a shave," which he did forthwith.

These cases illustrate the frequency of malingering and the ease with which the credulity of physicians is played upon. In his ordinary practice the physician takes for granted that his patient is telling the truth when his statements concern his symptoms. He gets into the habit of believing in the genuineness of subjective symptoms. The ordinary patient comes to the physician for relief, not for purposes of gain. The person who has received an injury that is due to the negligence of another person or corporation consults the physician with a double purpose: to obtain relief from his suffering and to secure compensation for the damage he has received. The psychological attitude of the two patients is wholly different. Human nature is not admirable in all its aspects. One of the least pleasing traits is the innate selfishness, cupidity, and deception that show themselves in damage cases. An injury received by a fall from a step-ladder in one's own house assumes an entirely different aspect from the same injury received in a railway train. The real psychological difference in the two cases is in the presence in the latter instance of the element of compensation. This determines the changed attitude of the patient, and, in the narration of his subjective symptoms, he consciously or unconsciously exaggerates or falsifies, if such will be to his advantage. The physician should be alert to this psychological condition and, instead of taking the statements of such a patient as the plain unvarnished truth, should be skeptical and suspicious, until he finds objective symptoms which confirm subjective complaints.

Either the medical profession is profoundly ignorant of the nervous phenomena which follow injury, or it is extremely careless in properly examining the injured man. Perhaps it would be nearer the truth to say that both conditions exist. The incapacity of the general practitioner to make a differential diagnosis of nervous dis-

ease is hardly creditable. There is nothing in neurology that is more difficult than things in other departments of medicine with which the general practitioner professes to be familiar. It is, however, traditional for the ordinary physician in making a diagnosis in a case of injury to accept as the truth the subjective symptoms, and by his unfamiliarity with nervous diseases to be unable to distinguish between the objective symptoms of functional and organic disease. In consequence he considers all the conditions to be of organic character, and falls readily into the trap that is laid for him by the malingerer.

Medical men must learn the significance of the psychology of trauma. They must make more careful examinations, always with a suspicion of deceit, in cases of claimants for damages. They must learn the few simple methods by which malingering may be detected, if they want to keep their skirts clear of the mud that besmears the fraudulent claimant. Until we awake to the fact that a large group of clever fakers are making us their easy dupes, we shall fail in our duty as physicians and citizens in aiding in the administration of justice.

THE EDUCATION OF THE NURSE

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Only second in the interest of the medical profession to the education of the doctor is the education of the nurse. Striking is the similarity of the history of education in the two professions. Identical causes have been operative in the evolution of each.

From the domestic helper, who has become increasingly inadequate to fulfill the needs of modern medicine in the care of the sick, to the practical or "experienced nurse," always a makeshift and often a menace to her patient, and on to the development of the highly trained nurse has been the tale of the progress of less than two generations of time,—an evolution accomplished, so far, in the face of almost insuperable difficulties. And yet to-day, with the avenues of opportunity opening wide before her, as they open to no other calling for women, the trained nurse,—the right hand of the physician, the greatest economic asset of the hospital, the most essential factor in our relief agencies,—the reliance of large numbers, as she should be of all classes of the people, in the event of sickness, is scarce to the famine of the entire country.

For several years past there has been a break in the continuity of the ranks of the nursing profession. Now there is a very definite shortage of nurses to be met. Medical societies, hospital associations, nursing organizations, physicians, and individual nurses, together with the people at large, are asking themselves, "What is the matter?" They have been asking that question a long time, and some of them, instead of meeting the issue squarely, have dodged it behind all sorts of expedients for the substitution of the cheap and inferior nurse, the nurses' aide, etc. That something is the matter and that some things charged up to the situation are not concerned with the matter at all, are alike true. The writer, concerned with the study of nursing education for a number of years, does not find the problem easy of solution. Of certain principles upon which its solution depends, we may rest assured. And, first, its ultimate solution will be made by the great body of nurses themselves. It will not be found, nor will it be imposed upon them, by other and inter-related interests. It will not be reached through the medium of such local partisan-spirited controversies as recently have been staged in the state of Illinois,—controversies which serve simply to becloud the public understanding, to create class feeling, and to embitter everybody concerned. It will not be settled by the creation of one type of nurses for the wealthy, and another type for the moderately circumstanced, and a third type for the indigent. The means and the mechanism must be found, either through state or social agencies, by which the highest order of nursing service will be available to all classes of the people alike.

Neither does the writer believe that the present situation can be understood by the medical profession or the public, save in the light which a review of the history of nursing education affords. It briefly follows:

Initially, the rapid rise of population in America, the remarkable advances of modern medicine, and the equally swift development of the modern hospital, created as active a demand for nurses as for doctors. The training of nurses as speedily and as easily as possible was the necessary response to this suddenly created need. It was

essential, in fact, to the very life of the hospital. The private training-school, attached to the hospital itself and unattached to any teaching institution, was established as an economic arm of the hospital organization. The pupil nurse became the principal objective in the hospital administrative eye. Her service was the primary thing. Her education was a by-product of the arrangement.

As hospitals multiplied, training-schools, fit and unfit, multiplied with them. Their students were inevitably exploited for the benefit of the hospital they served; and, if there is any saving grace in hardship, the school experiences of the past may be classed among the disciplinary agencies by which the profession of nursing is coming into its own.

Undoubtedly, these hospitals have rendered a public service, not only in their intramural nursing, but in their output of fairly trained women for private practice. For the time being, the denominational and later the municipal hospital was the only mechanism available for the necessary supply of nurses for social uses. Multitudes of these schools still remain, sharing in the shortage of applicants for training,—a shortage which, in the light of their past affluence of pupil help, many of them find it difficult to understand.

But in education, as in economics, deflation necessarily follows upon inflation. A period of educational stock-taking has ensued,—a transition period marked by the old inevitable struggle between standards and opportunism, between professionalism and commercialism, between temporary and ultimate gain. The transition has been slow, because it has been moving squarely against the vested interests of hospitals long in control of the destinies of nursing education. A few leaders of the profession, women of vision, long ago pointed their associates in the direction of progress, but they found no open road. The way had to be blazed. A new order must be established. Realizing the strength that lies in union, they organized the alumnæ of the nursing schools and the superintendents of these schools, and gave them the potentiality of corporate bodies.

They suggested the regulation of educational standards and the licensure of trained nurses by state boards of examiners as a means of establishing at least minimal requirements of training. Little, however, was actually done toward educational progress beyond the extension of the course of training in certain schools to three years and the offer, notably at Columbia University, of graduate study for nurses. Sometimes the third year of training in the schools meant better education for the nurse, sometimes it meant merely longer service for the hospital.

Nevertheless, there were indications of the development of a real group consciousness in the profession. The time was ripe for reform, when suddenly the door of opportunity opened and in an altogether unexpected quarter. A teaching hospital was provided by gift at the University of Minnesota and with it came the inspiration to a University School of Nursing. The first school of instruction for nurses under University ownership and control was created. University requirements for admission were established; classes were entered; an efficient superintendent was placed at the head of the school; a new era of university education for nurses had begun.

In the eleven years following that event, the idea of the school of nursing attached to a major teaching institution, using the hospital as its laboratory of training, has budded like Aaron's rod with multiplying leaves of promise. Six great universities have followed in the footsteps of Minnesota. Everywhere negotiations for affiliation have been in the air. The movement has given a new impetus to nursing education, and, if there is today a temporary halt in the progress of the new order, we may, nevertheless, rest assured that in this, as in every other product of evolutional development, "what is good is permanent."

Then came the Great World War, with its call for nurses the world over such as had never been heard before. Trained women were enlisted in large numbers. New demands were made upon them. Their fitness, their training were tested out in the crucibles of the great occasion. New visions of their latent possibilities rose before their eyes. New avenues of opportunity opened up. The fit among them grew in mental stature. The unfit had an awakening to the faults of their training, to their own needs of growth. Initial fitness, adequate preparation were the new standards set before these women by the war. They returned to their own country with the sense of a new future, and, undoubtedly, they have conveyed a measure of that sense to their sister nurses. A reorganizing profession is the result. In the ranks of already trained women in nursing the present situation, the social unrest, the attempted readjustment of themselves to a new outlook, is something for which it is sufficiently easy to account. Human elements everywhere are in solution. Their re-crystallization is a matter of time.

But what of the new-comers, the neophytes of nursing? What of the definite shortage of ap-

plicants for registration in the schools? It is not enough to say, in answer to these pertinent queries, that many more avenues of opportunity are opening to women. True, and there are many more women entering into them. Not for a moment may he who knows nurses admit that women are any less anxious than in the past to enter a calling of service; that they are daunted at its threshold by the thought of personal or social sacrifice. Greatly as training to the point of high efficiency has changed the social status of the nurse, it remains true that the nursing of the sick and the injured is a phase of the fundamental function of womanhood. The testimony of the long sacrificial past of woman to her capacity for sacrifice and service forever holds good.

Nor has the entrant into the profession of nursing, who must necessarily weigh the economic prospects of her future, any good cause to doubt the adequacy of her material rewards of service, whether in private or public employ. The laborer in this field who is worthy of her hire is paid, as she should be paid, well.

It is more to the point to note that nursing is a profession suddenly widening out into a number of diverse callings, that broad paths of opportunity are opening up to trained women for which they cannot be trained fast enough or well enough in very short order. Community nursing, visiting nursing, public-school nursing, infant and child-welfare work, medical social service, industrial and mercantile nursing, institutional management, organized clinics superadded to private practice, are calling for women, as trained and super-trained nurses, to answer to their needs. It is in nowise strange that these new conditions should give pause to the student who thinks of entering a vocation and lead her to say, in hestitation over the prospect, "Who is sufficient for these things?"

And does not this carry with it a pregnant suggestion of, at least, certain of the causes which underlie the present situation in nursing? Is not the answer to this educational problem to be found in the personal status of the questioner at the door of her own future—a status which she shares with constantly increasing groups of young women who are seeking a vocation? There are many of them—these girls who desire to do things. They are doing their own thinking today—thinking that has hitherto been done for them. The experiences, the tragic experiences, of the recent past of the world have borne in upon them two things: the essential of fitness and the essential of fit preparation for the world's work. With less of self-assurance and with more of self-confidence they are asking themselves two questions: "Am I adequate to the job?" "Is the job adequate for me?"

When it comes to the question of nursing as a vocation, they find certain conflicting elements entering into the problem. An educational past of unsatisfactory savor in the schools of training. A demand for three years of devotion to training, the expenditure of which may or may not be justified by the quid pro quo. A vista of possibilities in nursing in which advanced training will be required and for which a broader basis of preliminary education should be laid. And when it comes to the selection of a school in which her vocation is to be learned, there is room, again, for due hesitation. Is the direction of the school in the hands of those who cherish the ideals and maintain the standards of nursing education? Does it exist for the sake of the hospital it serves or for the sake of the student it trains? These are questions which past history justifies. If the record of an available school warrants the suggestion that its pupils satisfy the hospital's hunger for help, rather than their hunger for an adequate education, the chances are good that the inquiring student may hesitate at the threshold of her undertaking; that she may pause to consider whether she herself is adequate to such a test—whether a calling which must be entered by ways so devious is adequate to her. And if, in ignorance or in despite of these conditions, she enters training, is it likely that the spirit of exploited service in many such schools will prove compatible with the spirit of social service, which has inspired her choice? Is it not possible that the measure of hardness with which the graduate nurse now and then takes her toll of the public may be at one with the hardness in which the hospital has taken toll of her. If she has been trained rather than educated, who is to blame if she has gained in technic and lost in culture?*

That the scarcity of registrants is not chargeable to the educational requirements of the schools is shown by the discovery that it is the inferior schools which most severely suffer a lack of applicants and the university schools which often have had to establish a limit of registration.

*The recent statement of one of the most prominent clinicians of the country, that he would consent to the entry of no daughter of his into a school of nursing, is unfortunate, but it tends to show that the situation so outlined has not been overdrawn.

There is hope in the pending report of the survey, under direction of the Rockefeller Foundation, of the schools of nursing. It should serve to suggest reasonable standards of preparation and education for the profession of nursing. It should give a powerful impetus to the support of schools which have their reason and end of being in the education of the nurse, rather than in the economic administration of the hospitals they serve. It should help to standardize nursing education in the university schools.

At this juncture, the School of Nursing of the University of Minnesota, the pioneer in the promotion of the university education of the nurse, has concerned itself with a careful study of the educational needs of the present, in a well-considered effort to meet the peculiar situation which the profession faces. It is meeting it in a number of rather significant ways.

Recognizing the economic difficulties which may beset the effort of the student to secure the best training she may get, realizing the superlative merit of the preliminary course of instruction, and appreciating the value of the service which the student nurse will render to the hospital, the University will hereafter provide for the housing and board of registrants in the preliminary course, who have hitherto paid their own costs, and will thus relieve them of a heavy burden of expense during this initial period. Thus economically equalized, the opportunity of a university education should commend itself to the applicant for training.

In the past, a limited bed capacity of the teaching hospital has limited, also, the registration of students in the University School. Recently the University of Minnesota has received overtures from other major hospitals proposing the adoption by the university of their schools of nursing and placing their hospitals, as laboratories for the teaching of nurses, at the University's service. This trust has been accepted and a greater school of nursing has thus been projected, which should exert a strong influence in standardizing the education of nurses throughout the state. The arrangement will enable the School to afford a more varied and complete training to students, who will be assigned in turn to different hospital services under a competent nursing directorship of them all. The hospitals which are co-operating with the University to this end are the Charles T. Miller Hospital of St. Paul, the Minneapolis General Hospital, and the Northern Pacific Beneficial Association Hospital.

A director, by University appointment, will be in charge of the greater school of nursing. A superintendent and assistant superintendent of nursing, with the necessary instructors, will be employed in each of the associated hospitals. The preliminary course for all students and the undergraduate lecture program will be conducted at the University and by University teachers.

The character of the co-operating institutions will suggest, at once, the varied educational opportunities they will afford to the greater University school. The merger implies the association of a teaching hospital where cases are chosen for purposes of study; a private hospital of the highest order and of modern equipment which has fifty free beds and ample accommodations, as a hotel for the sick, for 166 private patients; a general or municipal hospital, in which emergency and acute cases and communicable diseases are nursed; and a beneficial institution in which the injured and the ill are cared for as in a social brotherhood, supported jointly by the employing railroad and the railway employees.

It means the nursing care of the indigent, of per-diem cases and of private patients. It offers, in addition to the usual medical, surgical, and obstetrical services, hospital and dispensary training in children's, contagious, and venereal diseases; in accident cases; in the more exclusive specialities; and it contemplates the early addition of a psychopathic clinic on the University Campus.

Requiring the high-school diploma as an entrance qualification, but following the rule of experience in placing the minimal registration age in the school of nursing at twenty years, it has been evident that the high-school student who would enter nursing as a vocation has an average of two years of waiting, breaking in upon the continuity of her education. The University of Minnesota has thrown a bridge over this age-gap by way of a five years combined course in arts and nursing, to which the high-school graduate will be immediately eligible. The first two years of this course are taken in the College of Science, Literature and the Arts, and are devoted to studies adaptive of the student to her future work. The succeeding two years are spent in the School of Nursing, and the final year is devoted to advanced subjects, both in arts and in nursing, which will go far towards fitting the student for a higher order of nursing activities, or for subsequent teaching in schools of nursing. This combined course leads to the degrees of Bachelor of Science and Graduate in Nursing. A number of students are already registered in

the course. They will enter the practice of nursing at the same age as their sisters of the nursing school may now graduate.

Realizing the acute need for highly trained women in the broadening functions of the public service the University has established, within the past two years, graduate courses in public-health nursing. These courses, covering eight months, are arranged in two four-month periods for the convenience of self-dependent women who may find it necessary to take them severally. Graduates or senior students of approved schools of nursing are admitted to these courses, provided they have the preliminary high-school education.

A number of University departments are associated in the teaching of these women in economics, sociology, hygiene, nutrition, educational psychology, public health, and preventive medicine; while a model health system, established in the rural districts of Hennepin County, together with the several relief agencies, the public school systems and certain industrial corporations of the Twin Cities provide the laboratory fields of study.

The University School of Nursing has always had occasion to congratulate itself upon the sterling quality of its alumnæ. It has given, and it will continue to give, the preference of its registration to women of superior ability and training. Fully 50 per cent of its graduates have had more or less academic training. It will promote in every way the combined course of study in which such higher preparation is offered.

It holds itself ready for any readjustment of its plan of instruction which the teaching authorities of the country may suggest. It desires in every possible way to meet the public need. It will not lend itself to any proposals for a diminution of educational standards. Its teaching and directing staff members have set their faces squarely against the device of short courses to prepare an inferior group of nurses; convinced that even if these women could make any fit contribution of social justice to the care of the unfortunate sick, no measures are practicable to maintain a sharp border-line between them and nurses of adequate and superior training.

Satisfied that society, under each and every economic condition of its members, should have available to its service the highest order of nursing, it favors the continued support and the further organization of public or private agencies through which trained nurses may be provided, by the hour, the day, or the week, at a cost which the economically disabled can meet, and by which the indigent sick may be given the same quality of professional care as the wealthy ill. Its advisors are confident that under the demands of modern medicine, with the new and broader conceptions of public health duty which an awakened social consciousness entertains, with the recognized need of greater physical fitness in the American people, to which the nursing profession must contribute, the nurse of today, in the exercise of these responsibilities of social service, as the personal exponent of a profession of service, should have the fullest preparation for her calling that the University may give; that, in herself and in her relation to society, she cannot be too highly trained, too wise, or too good.

PENETRATING WOUNDS OF THE CHEST*

CLARENCE C. DEL MARCELLE, B.Sc., M.D.
NEENAH, WISCONSIN

In looking over the recent literature on lung and chest injuries, I can find no articles on the immediate care of such cases. Most of the surgery has been done by men who saw the cases from six to forty-eight hours and longer after the injury.

In presenting a group of cases seen from fifteen minutes to one and one-half hours after injury, it is understood that the loss by death is higher than the cases seen hours later. The chief benefit to be derived from the study of cases at the time of injury is in conjunction with the complications and their treatment as they occur hours and days later.

As to the advisability of attempting to outline the treatment, there is considerable doubt, for every injury is a case in itself. Certain well-defined principles of treatment were followed. In view of the fact that the mortality rate is from 55 to 65 per cent higher within the first seven days, early treatment is necessary. There is a difference of opinion as to the early removal of foreign bodies. Some surgeons are much more enthusiastic than others in advocating the early

*Presented at the annual meeting of the Soo Railway Surgical Association, Minneapolis, December 17, 1920.

removal of foreign bodies from the lung. Our experience taught us to remove all foreign bodies that were easily accessible, but to leave those that would require time and injury to the parts for some future date.

In reviewing these cases a division will be made between the treatment within the first two hours after injury and those that are treated from ten to forty-eight hours later.

Perforating Wounds of Chest Not Sucking.—These cases had the side of the chest strapped with adhesive straps, and morphine, gr. ¼, and atropine, gr. $\frac{1}{150}$, was given subcutaneously, and the patient sent back for further observation.

Sucking Wounds of the Chest.—Sucking wounds are those in which there is a free access of air to and from the interior of the chest. The wounds when small are not necessarily dangerous. Sucking wounds, however, when large enough to admit air in quantities as large as that admitted by the larynx, are extremely dangerous. These patients always show a certain degree of shock. This element of depression is caused by fatigue, both mental and physical, and hemorrhage. It was to control hemorrhage that we had the first-aid men at the front pin up the chest wounds. In June and the first part of July, 1918, when we were at a loss to know what to do to control hemorrhage in these cases, some one thought to pin the wounds. Up to that time gauze dressing had been applied, but that did very little good, if any. The blood would soon soak through the dressing, and the patient would continue to hemorrhage; in consequence the majority of patients with large sucking wounds died before they even saw a dressing station or very soon after. We also used gauze plugs on three cases. These three patients died en route to our evacuation hospital in the rear.

In July the first-aid men began to pin up the chest wounds, and the patients came to us in much better physical condition, due to the fact that the hemorrhage was much better controlled. The pinning up of the chest is very simple and I am sure it saved the lives of many of our men. One, two, three or more safety pins were used, as necessary. The men were told to take a good deep bite, including the skin and as much of the muscle as possible, bring the edges together and apply a gauze dressing.

Emergency Surgery of Sucking Wounds.—The dressing and safety-pins were removed, a débridement of the superficial wound done, and deep mattress sutures applied. In using the mattress suture a good big bite of skin and muscle was taken. The patient was put to bed in a sitting posture, and morphine, gr. ¼, and atropine, gr. $\frac{1}{150}$, was given, and normal saline was given subcutaneously or intravenously, as indicated. Heat was applied by emergency stoves, made of large tin cans and a wax candle. Openings in the can on the back and front made it possible for us to direct the currents of heat in the proper direction.

The patients were given liquids freely, and at the end of sixty to seventy-two hours were in fair condition. They were then sent back to hospitals where the proper treatment, as indicated, was given.

The mortality rate among the men who came to us was 14 per cent, which included all degrees of chest wounds. The work was done here under local anesthesia, but more frequently no anesthetic.

In November, 1918, I was admitted as a patient to one of the base hospitals in Southern France, and while there I had an opportunity to see the end-results of some of our early chest work.

Complications following chest wounds seen from three days to two weeks after injury:

Hemothorax.—In their series 50 per cent of chest wounds developed hemothorax and 38 per cent of these an empyema. The treatment for hemothorax was simple aspiration of the chest. The best results were noted in those cases that had been aspirated early.

Empyema.—The treatment in these cases was the removal of the foreign bodies, when present, and the employment of tubular drainage. A small sinus was the end-result in 70 per cent of the cases; few had large cavities.

Fractured Ribs.—Fracture of one or more ribs was a frequent complication and usually a serious one. Most of the cases with fractured ribs developed an infection, and 52 per cent of these cases died.

CONCLUSIONS

1. The early control of hemorrhage lessens mortality.
2. The mortality rate in the first two hours was 14 per cent, due chiefly to hemorrhage.
3. The mortality in patients seen later was 7 per cent.
4. The early diagnosis of hemothorax and early aspiration is of great importance.
5. All cases of chest wounds do not require removal of foreign bodies.

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DISCUSSION

Dr. Arthur N. Collins (Duluth, Minn.): Chest wounds constitute a very interesting chapter in battle casualties, for the reason that there is so much physiology that is apt to be disturbed by a punctured or penetrating or other disabling wound of the chest. A punctured wound of the chest, if no missile goes in, can be treated the same as a puncture of the finger, and with not very much fear of ill after-results; but a punctured wound of the chest by a pointed object rammed in, presents an entirely different situation. Under all circumstances we have the possibility of infection from without, as well as the possibility of infection from within. The lung contains much infective material breathed in with the air. Exteriorly we have the clothing to furnish infection to or in the wound. If the wound does become infected, it is easy for the infective process to spread to the pleural cavity and its contents.

A different situation presented itself during the recent war than was presented at the time of the Boer War. The Boer War was fought in a dry country and mostly with bullets, while in the World War the missiles were mostly fragments of shell, causing torn and lacerated wounds. The ground over which the men fought was a cultivated, highly fertilized country, where all sorts of infection were mixed with the soil, penetrating the clothing and contaminating the skin; also it was a damp country. At first the attempt was to treat chest wounds in this war much the same as similar wounds in the Boer War, by leaving them severely alone, allowing nature to do what it would. But this caused a very high mortality, and it was soon found that it was necessary to treat these cases from an entirely different standpoint because infections occurred so frequently; therefore, the treatment resolved itself into several subdivisions.

It was found that mortality occurred in three different groups.

First, a few hours following injury. Of course, in these instances death could usually be traced to the very severe injury, causing hemorrhage and shock. The routine treatment employed would naturally be rest for the patient, a large amount of fluid fed into the intestinal tract, through the circulatory system, through the rectum, and what not. Transfusion was necessary where there had been severe bleeding. The novel method of closing the wound described by the essayist I had not heard before. It seems to me, however, that it is a very fine way of doing, as it approximates the edges of the wound where they are approximable, and by a measure which is nearly always at hand, the first-aid package usually being found to contain a safety-pin.

Second, deaths occurring two or three days following injury. These usually are traceable to acute overwhelming sepsis of the pleura and its contents.

Third, deaths occuring after the patient had been sent to the base hospital. We can also trace these to sepsis, the slow and prolonged septic process finally tiring out the patient.

The source of infection in these cases may be the missile itself, or the clothing carried in by the missile. It was found that where rib splinters were carried into the chest the infection was very severe. I remember an accidental case that occurred at the base hospital. No one saw the accident, but the man was found dead from a gunshot wound, the rifle lying on the floor. A court of inquiry was organized to find out the cause of death. Two wounds were in the chest, one in front and one directly back, showing that the man had been shot through the chest. At autopsy the question came up as to whether he was shot from behind or in front,—in other words, did he commit this act himself, or did someone else shoot him? Up to the very stage of post-mortem examination of the chest it was a disputed point until they found that the bullet had grazed one of the ribs and that a piece of that rib was missing. If he had been shot from behind it might be that the piece of rib was shot out through the hole in the anterior wall; on the other hand, if shot from in front and that piece of rib was in the body there could be no question but that he was shot from the front. They found this piece of rib in the posterior chest cavity, proving he was shot from in front.

In these cases the surgeon's first duty is to preserve life and employ such of the following resuscitative measures as seem to be necessary: arrest hemorrhage, do transfusion, give the patient plenty of heat and rest, and, in selected cases, mechanically cleanse the wound, do débridement or mechanically cut out all tissue which is likely to slough and which is not well connected with the circulatory supply.

Hemothorax is best treated by drawing off the fluid. Later, it may be necessary to do a thoracotomy. One of the most important things to do, while the patient is recovering from the immediate effects of the injury, is to discover infection, and discover it early. After empyema developed in the army, the Carrel-Dakin solution was found to be very effective. Removal of foreign bodies should be done at a later stage. We are still getting these cases in the Public Health Service. I have under my care at the present time a boy in whose case a piece of shell entered just at the apex of the axilla in the back and went straight through into his chest. Spitting of blood immediately occurred. He did not have a great deal of shock, but has had that condition existing practically ever since. Sometimes it heals and he is well, then he perhaps hurries and the excessive breathing brings on pain and spitting of blood.

Dr. Frederick A. Dunsmoor (Minneapolis, Minn.): I am interested in the essayist's report of how pinning the chest wound controlled hemorrhage until the attending surgeon could take care of it. Where does that hemorrhage come from that is controlled by pinning the edges of the wound together? If it comes from the wound outside, really it seems to me that it could be controlled with forceps or ordinary instruments. If it comes from the lung substance itself, it certainly could escape into the pleural cavity, and there would be a big chance for empyema and a profuse hemorrhage sufficiently large to be fatal. However, "the proof of the pudding is in the eating." If pinning really does control the hemorrhage, well and good.

A number of army surgeons made a report at the University of Minnesota, and the distinguished chief of the French service, Dr. Pierre Duval, was talking on this same topic. Those of us who had the pleasure of listening to him on that occasion, remember that he said he very freely opened the chest for the purpose of con-

trolling the hemorrhage, pulling the lung tissue out of the thorax, if necessary. While this looked like hazardous surgery at the time, his report was astounding as to the percentage of successes which followed his major operations.

My own experience has been largely with knife wounds. I have seen people who, in trying to commit suicide, have penetrated not only the chest, but the lung or the heart, as well. In five attempts at suicide the knife penetrated the lung—in two the heart was involved. I had to lay the chest wide open in order to get at the heart and sew up the wound in that organ. My first experience in this type of case occurred in 1878, when I went to Princeton, Minn., to see a man who had been injured by a bull. The man was very large and the bull hooked him, with his horns, under the scapula. He had a suction wound. The local surgeon who saw him first had put a pad on to control the air. I remember distinctly that in those days, when treating wounds of that type we were able to control hemorrhage and pneumothorax by the dressings. This man recovered and became one of our legislators.

The military surgeons have dwelt upon the theory that infection in these cases frequently comes from the missile which enters the chest. It seems to me that the heat generated from the missile or from the explosion of the gunpowder behind it should sterilize the metal, and that we should look for infection, not to the missile or the metal itself, but to the clothing or something already on the skin, or the contamination of the punctured part of the lung.

Dr. Collins: Dr. Dunsmoor's inquiry is one that has been brought up before. We all remember that in the recent war these bits of shell flying in all directions were parts of an original shell which was shot down into the ground and exploded almost invariably after striking the ground, thus giving all of the fragments an opportunity to become plentifully contaminated.

Dr. Eric P. Quain (Bismarck, N. D.): These shells were sometimes exploded in the filthiest places, and frequently after they had exploded the fragments would tear through several feet of dirt and would not have time to become sterilized from friction before inflicting wounds. Practically, every single one of these fragments was infective, and it made little difference whether they struck bare surfaces or whether they passed through the soldier's clothing. The clothing was usually saturated with mud and dirt, and anything passing through the clothing would always carry infection.

Dr. Frank M. Archibald (Mahnomen, Minn.): I would like to ask just how far we can go in this débridement measure. In lacerated wounds of the soft parts would the surgeon endeavor to make a clean-cut wound, or would he just simply trim up the lacerations?

Dr. Quain: The wound was excised completely, provided there was not at the bottom of the wound or along the side some vital structure. Sometimes even large arteries and nerves had to be sacrificed when infection was evidently present. If the wound had been produced by a shell, the explosive effect of the missile entering the body had devitalized the entire wall of that wound, and when one started to excise the devitalized tissue he could determine how far the devitalization had gone. One would go far enough out so that the tissues would bleed freely, so that the pale gray color was removed, and then one would follow that out in all the crevices and sinuses which the wound might present. No effort would be made to make a nice, clean-cut wound, because in so doing one would sacrifice tissue which one wished to save. All these wounds were left wide open, to be treated subsequently, either by secondary suturing or by disinfection and slow secondary healing.

Dr. Del Marcelle (closing): I wish to refer to fracturing of the rib. In the early part of June, in Belleau Woods, during the first engagement the Americans had been in, we were all very green; we had to learn all these things. We thought the men were coming back with soft-nosed bullet wounds because there would be a little opening in the anterior chest wall the size of a nickel, while the opening in the back of the chest was the size of the hand, and we could not account for it. We finally found that the bullets, in going through, would take a piece of rib with them and tear out the chest wall.

In regard to pinning up the chest wall: We believe that the hemorrhage was controlled in those cases by the pressure in the lung itself. Before we began covering up these chest wounds we found the patients coming back practically exsanguinated and pulseless. We tried to do what we could, but the majority died; we could not hit on anything that would help them. After beginning to pin up the chest wound they came back in great deal better condition. We thought the favorable results were due to blood in the pleura and lung, exerting a pressure on the blood-vessels that had been ruptured. We never had an opportunity to trace this up. The only thing we knew was that the patients were in 100 per cent better condition following pinning up of the chest wound.

In regard to the shell fragments: We use the term shrapnel, and it covers a great many sins. Shrapnel is made with many fragments in it. They put in round pieces, like large bullets, pieces of old scrap iron, and a variety of other things. Besides this we had the high explosive shell, which would hit the ground, splashing, raking, and then hitting the men. These were also called shrapnel, but were really high explosive shells.

I do not believe that all the infection was due to these fragments, but to the clothing of the men, because there were weeks at a time that we never saw water, never had our clothes off. We were infested more or less with "cooties"; consequently these men had a great deal of infection in their clothing, therefore bits of clothing would carry infection into the wound.

Dr. Quain: How do you pin the wound together? Will you again tell us how this is done?

Dr. Del Marcelle: Safety-pins were in all the first-aid packets, also the first-aid men carried such pins. They were told to stick the pin in as deeply as they could and bring up the edges of the wound so the layers of the skin would be everted, then closing the pin. A first aid bandage was applied over the wound. The pin is put in a good deal like a mattress-suture, through one side and then through the other side, then passed over, each time tying the edges of the wound. We thought by doing that the hemorrhage was controlled by pressure,—in other words, the hemorrhage reduced itself.

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MINNEAPOLIS CLINIC WEEK

Minneapolis Clinic Week, which opens on the 25th of April, is the fourth of a series given by Minneapolis physicians, and it promises to be better than any that has been given before.

Clinics will begin Monday morning, the 25th, at 8:30 o'clock, and continue until Thursday night, the 28th. All visiting physicians are urged to stay through the entire program, and we hope they will be well rewarded if they stay and hear all the men who are taking part in the program.

Each day's program will be ready for distribution the day preceding, though a tentative program for all the week will be sent out by letter.

Aside from the clinics to be given at the different hospitals in the city there is to be a two-hour meeting each afternoon in the Gold Room of the Radisson Hotel from 4:00 o'clock to 6:00 o'clock. The first hour of each meeting is to be occupied by local men, who will discuss subjects in which we are all interested.

The first day's afternoon program, beginning at 4:00 o'clock, will be given over to the discussion of "Anesthesia, General and Local." The discussion will be by men who know something of the subject. Particularly the general form of the subject will be taken up by a man who devotes himself exclusively to that work and who has inaugurated a short course in anesthesia at the Minneapolis General Hospital.

At 5:00 o'clock Dr. Kellogg Speed, Assistant Professor of Surgery, Rush Medical College, Chicago, will talk on "Appendicitis in Children Under Twelve Years of Age."

On Tuesday, at 4:00 o'clock, the program will be devoted to the discussion of "Lethargic Encephalitis." No doubt the various types, including the sleep form, will be considered. Each man will be permitted but ten minutes for the presentation of his part of the subject.

At 5:00 o'clock Dr. Kellogg Speed will again be the speaker, and will discuss "Fractures in Children Under Twelve Years of Age," illustrated by lantern slides and such other matter as he may see fit to present.

On Wednesday afternoon at 4:00 o'clock the subject under discussion will be "Gastroduodenal Ulcer From a Medical and Surgical Standpoint." Apparently the neurologist has been barred from participating, as it seemed to the committee that there was no other possible side to the so-called gastroduodenal ulcers but the medical or surgical. This will be presented in brief debate.

At 5:00 o'clock Dr. James B. Herrick, Professor of Medicine, Rush Medical College, will give an address on "Pain in Heart Disease." Again in the evening following the annual dinner of the Hennepin County Medical Society, Dr. Herrick will talk on "Certain Clinical Features of Metastatic Tumors."

One can readily see how very interesting Dr. Herrick will be in the discussion of these topics.

On Thursday at 4:00 o'clock the subject for exploitation will be "Laboratory Methods," and this will deal with blood culture, pathological specimens, and metabolism. In this discussion it is expected that five men will speak for ten minutes each, on the various points of the subject, and each will endeavor to show why it is necessary that laboratory methods should be more generally employed, and also to explain the necessity of making these various tests to determine what is good for the patient.

At 5:00 o'clock Dr. Walter Timme, of New York City, a neurologist of eminence, and attending neurologist to the New York Neurological Institute, will talk on "Endocrine Problems," and the committee can safely promise a rare treat from Dr. Timme, as he is not only a speaker of note, but is a man trained and experienced in all matters pertaining to the ductless glands.

As these talks are to be comparatively short, no one need feel any hesitancy in following them through from Monday until Thursday evening. This gives those attending the entire program time to get back to their homes and their work,

after a very profitable week of clinical work, we believe.

The hospitals have become so accustomed to the necessities of the guests that they will make every effort to have everything as convenient as possible for the guests. Many little inconveniences and annoyances of last year will be eliminated.

The committee in charge of the *x*-ray exhibit promises our visitors a treat in this line. The pictures will be new every day, and a radiologist will be present every afternoon to explain the views exhibited.

SCIENTIFIC ANATOMY VS. UNSCIENTIFIC ANATOMY AND IGNORANCE

THE JOURNAL-LANCET feels called upon to reply to a criticism made by a certain chiropractor relative to a statement made in these columns, regarding the strange case of Miriam Rubin, the "talking girl."

The Minneapolis Tribune took upon itself the abstraction of part of the editorial in THE JOURNAL-LANCET on this girl's condition, and then tacked onto it an interview with two chiropractors, in which one of them branded as a lie THE JOURNAL-LANCET'S statement as to the position of the nerve of speech, and added thereto the statement that affidavits have been made by the parents of the girl to the effect that the cure was made through a chiropractor, according to chiropractor Strand.

The statement made in these columns to the effect that the nerve of speech does not go down through the spinal column and cord still holds good, and is corroborated by such eminent men as Quain in his work on anatomy, Gray in his work, and Piersol in "Human Anatomy." Perhaps it might be excusable to state that all of these eminent anatomists have dissected human bodies for years, and they have come to their conclusions after many years of careful research —quite different from the man who takes up the study of the human body from a correspondence-school point of view. Naturally, this man is unable to absorb anatomical problems because he has never laid a foundation for study in that direction.

The principal center of speech lies in the left frontoparietal region of the brain. From here its fibers course down through the white substance of the brain and unite with association tracts. The mechanism of speech is very complex, on account of the association of various nerve cells in several areas in the cortex of the brain; but the principal and direct center of speech lies, as stated before, in the left hemisphere. The only cranial nerve which has anything whatever to do with the spinal cord is a branch of the spinal accessory. This accessory branch is called the *spinal portion,* and is so termed because it arises from the spinal cord. It receives its name in recognition of the fact that it is accessory to the vagus nerve.

This branch has nothing to do with the mechanism of speech in any way, and it is to be remembered, too, that this branch belongs to the eleventh cranial nerve. The twelfth cranial nerve is the hypoglossal. This, the last of the cranial nerves, is a purely motor nerve, and supplies the musculature of the tongue, intrinsic as well as extrinsic, and does not in any way communicate with the spinal column, except that it arises from motor roots in the medulla, and these cells are similar in kind to the motor cells that are found in the spinal cord. This nerve's course is entirely within the cranial cavity and has nothing whatever to do with the spinal cord, either in its mechanism or in its motor functions.

The vagus nerve, the tenth of the twelve pairs, commonly known as the pneumogastric nerve, is the longest and most widely distributed of the cranial nerves. It starts in the cranium, passes through the neck, thorax, and upper part of the abdomen, so that it virtually controls the special activities of the throat, thorax, and vocal box, and also the heart and abdominal viscera, and contains both motor and sensory fibers. It is not a real nerve of speech, but its sensory filaments are distributed to the larynx, pharynx, and soft palate, as well as to the pulmonary organs, which are associated with speech only in that they provide the mechanism for the air to go into and out of the lungs. It is in no way connected with the spinal column, except from one branch of the spinal accessory nerve. The fifth cranial nerve is a sensory nerve of the face, and the motor nerve of the muscles of mastication.

The seventh cranial nerve is a facial nerve, and is a mixed nerve, consisting of two parts, a large motor and a small sensory branch. The motor trunk supplies the muscles of expression, and also the extrinsic, as well as the intrinsic, muscles of the external ear, and, again, has nothing definite to do with speech. Neither the fifth nor the seventh nerve has any connection with the spine or spinal cord. Consequently the mechanism of speech is due to the reactions of the large gray cells in the cortex of the brain, and the association of fibers which come from other parts

of the brain and go to the nerve trunks which supply the throat and the vocal apparatus in a most complex form. They are connected by small fibers from adjoining cranial nerves, and, together with the complex mechanism of the cortex of the brain, provide for the development of speech, expression, and mechanical articulation.

From the above it will be seen that the statement that any part of a speech nerve is accessible by a manipulation of the spinal column is untrue, according to our great anatomists. Then, too, the idea that the irritation of a nerve in the spinal cord or spinal column produces a tendency to excessive talking is foreign to the belief of the students of cerebral anatomy and physiology. It is the irritation of a cortical center, a brain disease, that produces either an excitement or a suppression of the functions which belong purely to the brain. This fact has been illustrated by the varying types of encephalitis which have been brought to our attention, all of which have been carefully investigated, and those who have died have been examined thoroughly by skilled pathologists.

Following is an extract from *The New York Times*:

A FICTION REPLACED BY FACTS

Readers of the more sophisticated sort must have suspected that there was something of inaccuracy in the recent widely circulated accounts of a little girl out in Waukegan, Ill., who, after talking continuously for several days, was almost instantly restored to health and a normal degree of silence by the readjustment of two displaced vertebrae.

That was the tale as told at Waukegan. The facts, as might have been expected by anybody familiar with the tricks and the ways of charlatans, were quite different. They are presented in the current issue of *The Journal of the American Medical Association.*

What the little girl had was not a new and mysterious "talking sickness," but encephalitis, a malady only too familiar at present. It is called "encephalitis lethargica" because most of the victims sink into, and remain in, a state approaching coma, but some of them, instead of showing lethargy, are delirious. The child's case was one of the rarer type. She was not cured, either instantly or at all, by the manipulation of her spine. She simply had after it one of the subsidences of delirium recovered even yet, but the brain inflammation is slowly subsiding, exactly as it always does in the cases that do not end fatally, and the prognosis is favorable.

One may be sure, though, that the "chiropractor" will claim his fee, and that his marvelous achievement in effecting a cure when the orthodox doctors were helpless will be widely used for the magnification of his particular sort of quackery.

SOME MEDICAL BILLS IN NORTHWESTERN LEGISLATURES

There is both a humorous and a pathetic side to the medical legislation, attempted and accomplished, in the Northwestern states, which is of special interest to our readers. As some of these bodies are still in existence and are capable of doing much harm, we shall not attempt, at this time, a review of their work; but enough has been done to make it seem worth while to refer to it now.

One bill, which took up a great deal of time of the legislators and of the medical men of the state, was designed to enable a single physician, a new-comer in the state, to obtain a license to practice. He was debarred from taking the examination by his lack of the legally prescribed collegiate education. He is said to be a capable physician and a very worthy man; but what justification can be found in special legislation to enable one man to take an examination from which hundreds, to the profit of the people of the state, have been debarred?

Another bill was designed to make all hospitals in the state *open* hospitals. Its passage would have closed the doors of most of the hospitals in the state, and would have opened the doors of all others to the abortionists, the dope-fiends, and all the incompetents of the state. It would have made the standardization of hospitals impossible. It would have been a real calamity to the state.

Another bill was really funny, and, we think, its passage would have accomplished good in the end by bringing the people to a sense of the folly and shame heaped upon them by such legislation.

It was a bill to license the practitioners of "suggestive therapy," or "suggestotherapy," which the bill defined as:

> "The science of using suggestion to "elicit the natural healing forces into "activity to cure or relieve mental or "bodily diseases, injuries or deformi-"ties."

For some reason, which we cannot divine, an ambiguous provision was tacked onto the definition, of which we quote only a part, as follows:

> "But this shall not be construed as in-"cluding Christian Science or any other "church practice of religion for the cure "of diseases, nor the practice of medi-"cine or surgery."

The next step in the establishment of this new body of ignorant practitioners was to appoint a board of examiners. The bill provided the gov-

ernor should appoint a layman and a practitioner of "Suggestive Therapeutics," the two to appoint a third member, whose politics is not defined in the bill. Of course, the board of examiners would grant licenses, and the bill therefore names the qualifications of applicants for diplomas, and they are rich. We can but briefly summarize them:

1. To be recognized as a member of the new cult at the time the act became law, one would have an established practice with an office equipped for such work.—Equipped for such work!

2. The applicant for a license must have had a "course of studies that will qualify the candidate to pass an examination in clinical work proving that he is competent to diagnose and treat the most common diseases." Pray, what are such diseases?

3. A candidate who falls below the standard set by the examining board may practice six months longer under a licensed practitioner called a "supervisor," and take another examination. When the supervisor assists the practicing candidate his compensation is fixed by the act, and is made the same by the hour as the supervisor earns in his own practice. This reminds one of the hourly wage fixed by a city nurses' association for nurses who go out by the hour.

4. In case a candidate who is taking a course under a supervisor is not satisfied with his instructor, he may select another supervisor, and shall receive credit for work done under the unsatisfactory practitioner.

5. One practicing "suggestotherapy" must make "a thorough physical and mental examination of every patient that he is called on to treat." If he is not sure of his diagnosis, he may refer his patient or call a consultant, and there shall be no fee-splitting.

6. When this six-months' embryo gets his or her or its license, the same may attach to his or her or its name the title D. S. T. (Doctor of Suggestive Therapeutics), and may do his or her or its d——st, but "shall not order the discontinuance of any legally prescribed medicine."

The intention of the last clause is not wholly clear. It may mean that if a regular physician prescribed a cathartic just before the "D. S. T." was called, and took the precaution to do it *legally*, the "D. S. T." may not order said cathartic discontinued. Why not?

7. The cracker of this bill is a provision that a fine or imprisonment may be imposed upon anyone without a suggestotherapy license who attempts to cure by suggestion, even to cure deformities in this way.

Another bill was introduced in another body of solons to confer upon osteopaths the right to practice surgery. Of course, the word *surgery* as used in this bill meant the act of cutting human flesh and bones. The word does not mean that alone in any school of practice requiring an educational preparation.

NEWS ITEMS

Dr. O. H. Rystad has moved from Crookston to Fisher.

Dr. George W. Frasier has resumed practice at Hill City.

Dr. C. A. Walters has moved from Wood, S. D., to Interior, S. D.

Dr. B. S. Bohling, of Sandstone, is doing postgraduate work in Chicago.

Dr. B. J. Shalett has given up practice at Rockford and may locate in Minneapolis.

Dr. J. M. Caldwell has given up practice in Bemidji, and is temporarily in Minneapolis.

Duluth is making a record among Minnesota cities for the small amount of liquor prescribed by its physicians.

Dr. R. G. Allison, of Minneapolis, is visiting the *x*-ray clinics of New York, Baltimore, and other Eastern cities.

Dr. George H. Davis, who formerly practiced at Bew, Mont., died last month at Farmington, New Mexico, at the age of 46.

News comes from Washington that the monthly maximum amount of beer that a physician may prescribe for a patient is 4⅞ gallons.

The Training-School of the Eitel Hospital of Minneapolis graduated a class of twenty-seven nurses on March 31st, with appropriate exercises.

Dr. C. G. Grulee, of Chicago, will address the Phi Rho Sigma medical fraternity of the University of Minnesota at its annual banquet tomorrow night.

Dr. A. C. Gronwold, of Ft. Ransom, N. D., has returned from Chicago, where he spent two months in postgraduate work in the Illinois Post-Graduate School.

Dr. K. W. Berry has moved from Roundup, Mont., to Miles City, in the same state. Dr.

Berry has done work in mining towns as a surgeon for a number of years.

A "Medicine Man" (Dr. Hubert Work, president of the A. M. A.) has been appointed, by President Harding, First Assistant Post-Master General of the United States.

Dr. F. E. Bunting, health officer of Mandan, N. D., has asked the council of that city to require that all cows from which milk for the city is obtained be tuberculin-tested.

Dr. Emil S. Geist, of Minneapolis, has offered a prize of $220 for the best essay by a medical student in the department of anatomy in the University of Minnesota, to be submitted by June 1.

Dr. O. R. Bryant, of Minneapolis, was elected president of the Fifteenth Minnesota Volunteers Association of Spanish-American War Veterans at its twenty-second annual reunion last month.

Dr. Wharton D. Little, of Maiden Rock, Wis., who was well known in Minnesota, died last month at the age of 53. He was a graduate of the College of P. & S., Keokuk, Iowa, class of '87.

The Minnesota State Board of Control is planning for a memorial service to the late Dr. A. J. Gillette, to be held at the Phalen Park Hospital for Crippled Children, which Dr. Gillette founded.

The Legislature of Minnesota has passed a law appropriating $200 a year for each crippled child taught in a special school for such children in Minnesota. The Duluth schools will start such a class at once.

At the April meeting (held April 7th) of the Huron (S. D.) Medical Society papers were read on "Shoes to Fit the Feet," by Mr. Albert Robinson, and on "Compound Fractures," by Dr. O. R. Wright, of Huron.

Dr. Clarence M. Bashford, of Red Lodge, Montana, died last week at the age of 35. Dr. Bashford graduated from the Medical School of the University of Minnesota with the class of '09, and went to Red Lodge in 1913.

Dr. John N. Osburn, of the Episcopal Eye and Ear Hospital of Washington, has become a member of the Nicollet Clinic. He is to be associated with Dr. William R. Murray in the department of Ophthalmology and Oto-Laryngology.

The American Journal of Surgery will make its May issue a special number on fractures. Twelve of the leading surgeons of the country will contribute articles on fractures. The number will be worth more than some text-books on the subject.

The next meeting of the Sioux Falls District Medical Society will be held on May 10th, with the following program: Symposium on Local Anesthesia—Dental, Dr. H. L. Eggers (D. D. S.); Eye and Ear, Dr. J. B. Gregg; General Surgery, Dr. G. E. Van Demark.

Dr. H. E. French, Dean of the University Medical School of North Dakota, has succeeded Dr. C. J. McGurren as secretary of the North Dakota State Board of Health. Dr. McGurren, of Devils Lake, has been secretary of the Board for eight years, and has been a highly efficient official.

Dr. W. A. Fansler, of Minneapolis, is the only physician of this section whose name appears on the program of the American Proctologic Society for its annual meeting in Boston in June. He is to speak on "The Use of Quinine Urea Hydrochloride in the Treatment of Partial Rectal Prolapse."

The June issue of the *Medical Review of Reviews*, of New York, will be a special radium number dedicated to Mme. Curie. The issue will consist exclusively of articles on radium and its uses. Copies will be sent complimentary to any physician interested in the uses of radium who asks for it.

Dr. F. C. Fitzell, who served six years on the surgical staff of the Cook County Hospital (Chicago) and twelve years as Professor of Surgery on the staff of the Iowa State University Medical School, has located at Jamestown, N. D., and is now a member of Stutsman County Medical Society and the State Association.

Dr. L. R. Thompson of the United States Public Health Service made a survey of the Duluth Health Department last month. Similar surveys are being made in all cities of 100,000 or more, with the purpose of developing the best possible system of conducting a city health department in a city of one hundred thousand or larger population.

An outbreak of typhoid fever occurred at the University of Minnesota last month, there being nearly 100 cases traceable probably to several days' use of infected bulk milk at a University dining-hall. The probable source was a typhoid-carrier in the service of the club, and the medium was milk, which was handled in bulk, not bottled. Many of the students have been vaccinated with typhoid vaccine. Up to the present time two deaths have occurred.

PROGRAMS OF THE AFTERNOON MEETINGS MINNEAPOLIS CLINIC WEEK, APRIL 25 TO 28, INCLUSIVE

Monday, April 25th

Dr. A. W. Abbott, *Chairman*

4 to 5 P. M.—

General Anesthesia:

1. General Anesthesia Problems, Dr. A. E. Guedell, of the General Hospital.
2. The Technic of Administrating General Anesthetics, Dr. Walter McGilvray, Anesthetist of the General Hospital.
3. The Local Anesthesia Problem, Dr. A. F. Bratrud.
4. The Technic of Administering Local Anesthesia, Dr. S. R. Maxeiner.

5 to 6 P. M.—

Appendicitis in Children Under Twelve Years of Age, Dr. Kellogg Speed, Associate Professor of Surgery, Rush Medical College, Chicago.

Tuesday, April 26th

Dr. J. A. Watson, *Chairman*

4 to 5 P. M.—

Encephalitis Lethargica:

1. Pathology, Dr. H. E. Robertson (lantern slides).
2. Diagnosis, Dr. A. S. Hamilton.
3. Treatment, Dr. Angus Morrison.

5 to 6 P. M.—

Fractures in Children Under Twelve Years of Age, Dr. Kellogg Speed, Assistant Professor of Surgery, Rush Medical College, Chicago.

Wednesday, April 27th

Dr. Geo. Douglas Head, *Chairman*

4 to 5 P. M.—

Duodenal Ulcer: Medical versus Surgical Treatment:

1. Medical Treatment, Dr. J. P. Schneider.
2. Surgical Treatment, Dr. Arthur Strachauer.
3. Medical Treatment in Ambulant Cases, Dr. C. B. Wright.
4. Surgical and When, Dr. Archa E. Wilcox.

5 to 6 P. M.—

Pain in Heart Disease, Dr. James B. Herrick, Professor of Medicine, Rush Medical College, Chicago.

8:00 P. M.—

Annual Banquet of the Hennepin Medical Society, and Address by Dr. James B. Herrick on Certain Clinical Features in Metastatic Tumors.

Thursday, April 28th

Dr. H. E. Robertson, *Chairman*

1. The Value of a Good Wassermann Test, Dr. G. Olson.
2. The Practical Help to Be Derived from Blood-sugar, Urea, Creatinin, and Uric-Acid Determinations, Dr. F. H. K. Schaaf.
3. The Practical Value of Basal Metabolic Rate Determinations, Dr. E. L. Gardner.
4. When and Why Is An Electrocardiogram in a Given Case of Value? Dr. O. Hansen.

5 to 6 P. M.—

Endocrine Problems, Dr. Walter Timme, Attending Neurologist for the New York Neurological Institute.

The *X*-Ray Exhibit

The *x*-ray specialists of the city will give a large exhibit of plates, which will be changed daily, and a radiologist will be present to explain the different pathological conditions shown. The exhibit will be in the Radisson Hotel.

The Minnesota Academy of Ophthalmology and Oto-Laryngology

On Tuesday evening, April 26th, the Academy will give a dinner at 6:30 o'clock at the Minneapolis Club, followed by a "Symposium on Tonsils." All visitors interested in this work are cordially invited to the dinner.

LOCATION WANTED

By a physician of ten years' experience in general practice, refraction and tonsil work, a location, contract practice or position in Minnesota, married, Protestant, age 38, active, willing to work, and capable. Address 126, care of this office.

STERILIZER FOR SALE

A 3-piece Wilmot Castle gas sterilizer, in excellent condition. Address 127, care of this office.

PRACTICE FOR SALE—EYE, EAR, NOSE AND THROAT

A well-established practice in above line in a fine city in Southern Minnesota is offered for sale at a moderate price, with or without property. Address 128, care of this office.

INSTRUMENTS FOR SALE

Holm's nasopharyngoscope, E. S. I. Co., in case with make and break cord, also tungsten battery, E. S. I. Co., with rheostat. Outfit used only a few months. Price, complete, $25.00. Address 126, care of this office.

GOOD LOCATION OR OPENING WANTED

One that will stand thorough investigation in Minneapolis, Albert Lea, or a thriving railroad county-seat town, with hospital or suitable for one, in Minnesota, Wisconsin, or South Dakota, but will consider any good location anywhere. Address 124, care of this office.

A 1917 BUICK CABRIOLET FOR SALE

This machine has new tires and is in excellent mechanical condition. It is especially adapted to a physician's work. For sale by a Minneapolis physician. Priced for $750. For further information, address 123, care of this office.

PHYSICIAN WANTED

An excellent opening in a German-speaking community in Southern Minnesota for a physician to work in connection with a group in a nearby town with excellent hospital facilities. Nothing to buy. Financial aid, if needed, will be given to right man. Address 121, care of this office.

ASSISTANTSHIP OR PARTNERSHIP WANTED

Wanted, assistantship to, or partnership with, a busy city physician or surgeon. Desire a permanent proposition with facilities for real scientific work. Graduate Class A University; in general practice eight years; married; good health; and can stand a lot of work. Address 122, care of this office.

POSITION OR LOCATION WANTED

A recent graduate of Northwestern with a year and a half interneship, including six months in the Chicago Lying-In Hospital and some general practice, wants to practice in a good village with hospital facilities, independently or associated with a surgeon. Licensed in Illinois and Minnesota. Aged 29 and unmarried. Best of references. Address 125, care of this office.

TO THE MEDICAL PROFESSION

THE NATIONAL PATHOLOGICAL LABORATORIES OF CHICAGO, ST. LOUIS, DETROIT, AND NEW YORK are Diagnostic Institutions, ideal in equipment and personnel.

The Directors of the Laboratories are always at your service for personal cooperation in all diagnostic problems.

The following are a few items from the fee list:

WASSERMANN TEST (BLOOD OR SPINAL FLUID) - - - - - - - - - $5.00
We do the classical test. Any of the various modifications will be made upon request, without additional charge. Sterile containers, with needle, gratis upon request.

EXAMINATION OF PATHOLOGICAL TISSUE - - - - - - - - - - $5.00
Accurate histological descriptions and diagnoses of tissues removed at operation should be part of the clinical record of all patients.

AUTOGENOUS VACCINES - - - - - - - - - - - - - - - - - - - $5.00
We culture all specimens aerobically and anaerobically and isolate the offending organisms. Pipettes for collecting material for autogenous vaccines sent upon request.

ANTI-RABIC VIRUS -- FULL COURSE TREATMENT - - - - - - - $25.00
As improved and made under the personal supervision of Dr. D. L. Harris. (U. S. Government License No. 66.) YOU GIVE THE TREATMENT YOURSELF. Sole Distributors. Telegraph orders given prompt attention. Write for Booklet.

X-RAY DEPARTMENT
Offers the highest class of consultation service on moderate fees. Appointments may be made from 9 a. m. to 5 p. m.

NATIONAL PATHOLOGICAL LABORATORIES (Inc.)
920 Peter Smith Bldg., DETROIT
NEW YORK: 18 E. 41st St. CHICAGO: 5 S. Wabash Ave. ST. LOUIS: University Club Bldg.

The Management of an Infant's Diet

Constipation

In a very large percentage of cases of constipation in early life, this annoying condition is due largely to some fault in the diet, and usually the difficulty can be easily traced to an incomplete digestion of protein or of fat. By changing the food and advising a daily diet prepared according to

The Mellin's Food Method of Milk Modification

the condition is very often corrected immediately, for the reason that Mellin's Food helps materially in the digestion of cow's milk. In cases where the condition has persisted for some time, simple changes in the proportion of Mellin's Food, milk and water will soon bring about normal stools.

Practical suggestions relative to the readjustment of the diet are set forth clearly in the chapter on "Stools" in our book, "Formulas for Infant Feeding." We also have a pamphlet devoted particularly to the subject, and all of this literature will be sent to any physician upon request.

Mellin's Food Company, Boston, Mass.

This G. E. Coolidge Tube X-Ray

is the most flexible X-Ray unit designed for the universal field of Hospital bedside work, Industrial Clinics and General Practioners

THE electrical design and operating features are so fundamentally correct that a tyro can make wonderful pictures fifteen minutes after installation.

The voltage and milliampereage are of the independent control type; either can be changed without affecting the other. The variable spark gap, 3 to 5 inches, is automatically adjusted with the voltage and milliampereage setting. The time switch is the guide and rule of all radiography — just push the button and when the desired number of seconds is up it automatically cuts off.

Tube arm is automatically balanced and is so flexible that it can be placed in any position; when placed, it requires no further adjustments. The stereoscopic shift, part of the tube stand, is a clever device for making stereoscopic pictures.

(G. E.) Transformer, Oil Immersed, Closed Core Type Made Especially for the 30 M. A. Coolidge Tube

This unit is shipped complete and when unpacked is ready for operation. It can be freely moved about and operated in any room. It is expressly adapted to medical radiography and is capable of doing all work, including chest, spine and intestinal tract.



- PRICE -

$960 complete

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827½ NICOLLET AVENUE
MINNEAPOLIS

THIS UNIT WILL BE ON EXHIBIT CLINIC WEEK AT RADISSON HOTEL

PUBLISHER'S DEPARTMENT

GASTRON "ARRIVES"

The products offered to the medical profession by Messrs. Fairchild Bros. & Foster during the past forty or more years, have been few in number, probably not over a half dozen, and they have been received with a confidence engendered by perfect confidence in the house itself, which has always been justified.

This old and reliable firm now tells medical men, in the terms of the caption of this notice, that Gastron has arrived. It has arrived because medical men have found it absolutely dependable in the treatment of gastric disturbances.

Gastron is a suitable name for an extract of the entire stomach glands, made by laboratory men of qualifications so high that modern laboratory accomplishments are thoroughly familiar to them, men who have done their share in modern laboratory discoveries.

Gastron is a much-needed product, and is certain to come into well-nigh universal use by physicians.

Literature can be obtained of Messrs. Fairchild Bros. & Foster, New York City.

PILL ALOPHEN

The selection of a simple laxative—Pill Alophen, for example—is not a haphazard act, but entails the exercise of judgment and skill based upon experience and a comprehensive knowledge of physiology and therapeutics.

The physician skilled in his art clearly sees certain indications for Pill Alophen—the necessity of relieving an over-distended colon with the least possible disturbance of a delicate organism, perhaps. He mentally reviews the list of available laxatives, to most of which there is some contra-indication—they do not exactly suit the conditions; they do not blend into the therapeutic scheme, so to speak. But Pill Alophen presents no such objection. Its action is mild, gentle, yet thoroughly efficient. Its administration offers no difficulty—it is beautifully coated with sweetened chocolate. But one pellet is sufficient in most cases, preferably taken at bedtime, and the result is all that one could wish—an easy, complete evacuation in the most natural way imaginable.

Pill Alophen is the product of a modern scientific laboratory. It is an agent worthy of the esteem of the therapeutist who is particular in the choice of his remedies. It is an efficient though mild laxative and of peculiar value in colonic stasis.

HYPOGENITALISM AND HYPOPLASIA OF THE TESTICLES

In the Wiener Klinische Wochenschrift for 1920, No. 9, Kyrle discusses the frequency of lack of development of the testicles in boys and the lack of development consequent upon it that is felt more or less throughout life. Kyrle insists that this fault entails a constitutional inferiority often persisting throughout life and affecting the general efficiency in a marked way. This Status Hypoplasticus leading to hypogenitalism and constitutional degradation, has for a structural basis an excess of interstitial tissues which more or less compresses the seminal tubules. At the age of puberty these hypoplastic tissues are urged to develop but the interstitial tissue may prevent the expansion of function on the part of the seminal tubules and confer upon the testicle the stigma of functional inferiority. The recognition of this menace at the earliest possible moment is the very best way to correct it. Since the pituitary, thyroid and suprarenals are all stimulants to the functional developments of the tubules, their use, together with preparations of testicles and prostate should offer the best hope of overcoming this fundamental fault.

LAVORIS

Lavoris is a medical and dental product that has had a phenomenal success, and this success is due entirely to its merits. It is a chloride of zinc preparation, made stable, with marked heating action, and so compounded as to be an antiseptic lotion very pleasant and refreshing in use wherever indicated, and it is indicated wherever the mucous membrane needs healing or guarding against infection.

It is made by the Lavoris Chemical Company, of Minneapolis, and sold everywhere.

A SPLENDID INVESTMENT

There is apparently no safer industrial stock on the market than the Preferred stock of the Northern States Power Company, affiliated with the General Electric Company. This stock pays 8.42 per cent on its present market cost.

The Company furnishes light and power to a large territory, and because of the high cost of coal its water rights are rapidly increasing in value. The Company has not missed a quarterly dividend since it began business eleven years ago.

THE RADISSON HOTEL, MINNEAPOLIS

The Radisson Hotel, Minneapolis, headquarters of the forthcoming Clinic Week, is one of the best conducted hotels in the Northwest, and its prices are very reasonable. It is a splendid place for physicians coming to the Clinic to locate. It is in the center of the amusement district and away from the noise of street cars.

Reservations for Clinic Week should be made at once by all who are coming to the city for one or more days.

THE WILLIAM PAINTER COMPANY, MINNEAPOLIS

This Company is offering two things of especial interest to physicians and surgeons because of their great excellence, low cost, and great usefulness. One is the K-K Mobile *x*-ray Unit; the other is a superior intensifying screen.

The Mobile *x*-ray Unit actually fills a long-felt want in the form of an apparatus that exactly meets the wants of medical men. It is compact, is as mobile as a light chair, and it does splendid work.

The intensifying screens cost no more than others, have many excellent points, and are replaced at very small cost.

Mr. Painter, of the Company, will be glad to meet visiting physicians to the Minneapolis Clinics and to show them these and other good things.

Atophan

Rheumatism -- Then and Now

Formerly the complaint "Rheumatism" promptly brought forth a prescription for Salicylates, simple or complex.

Relief, or even cure, was obtained, though sometimes only after fairly prolonged administration.

The constipating, heart-depressant, kidney-irritant and cumulative toxic by-effects were either not fully realized, or passed up as "necessary evils".

Now-a-days, the physician writes "ATOPHAN", happy to be able to do so much better for his patient.

Quicker, cleaner-cut results, markedly devoid of those "it-can't-be-helped" drawbacks.

U. S. A.-Made and Available Everywhere
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When Iodine Is Indicated

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Burnham's Soluble Iodine



and thus assure the results you seek.

B. S. I. can be used in adequate dosage, over long periods, without gastric disturbance, or other disagreeable effect.

A preparation that offers remarkable possibilities in the treatment of many intractable diseases. If you have some case that bothers you, our medical adviser will be glad to outline what you may accomplish with B. S. I.

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Auburndale, Mass.

Protect Your Health

The various contagious diseases that have existed the past year should be sufficient warning to all householders to take special precaution to insure good health.

The constant daily use of a Reliable Disinfectant will prevent the spread of disease germs, and leave a clean, healthy atmosphere.

PLATT'S CHLORIDES has received the approval of the medical profession for more than thirty-eight years as the Standard Disinfectant in the hospital, sanitarium, sickroom and the household.

Platt's Chlorides

The Odorless Disinfectant

Sold everywhere in two sizes.

Is absolutely Odorless, yet strong and effective.

Write for sample and booklet to the manufacturers

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CELLOSILK

Cellosilk is a surgical dressing that needs to be used only once to captivate the most particular surgeon. It is non-adherent, transparent, occlusive, sterilizable, water-proof surgical dressing put up in perforated and impervious forms, and in various sizes to meet all needs. It is superior in many respects to oiled silk, gutta percha, or rubber, and is very economical.

It may be seen at the scientific exhibit in the Radisson Hotel during Clinic Week.

It is made by the Marshalltown (Iowa) Laboratories.

MEAT FOR THE HOSPITAL

A member of the Department of Food Economics of Armour and Company, has written very instructively about the preparation of meat served in the hospital, where the needs of three classes of persons are to be met: The sick and the convalescent, who have dainty appetites, or none at all; the help, who demand hearty food; the brain-workers, who are satisfied with only the high-priced cuts.

The Armour writer points out that the cheapest cuts —cheap because the demand for them is small, while they constitute three-fourths of the weight of the carcass—are just as nourishing as the more expensive cuts. And he shows that they can be made just about as nourishing by proper cooking and seasoning.

This great house is doing a commendable work in their endeavor to educate the public to economize along this line, and they do well to use the medical profession to reach the public.

They also supply the spices, herbs, and seasonings needed, together with recipes for cooking and serving meat foods in the best manner.

We cordially commend this effort to serve the public, and we advise our readers who are interested to write the Armour Company (Chicago) for further details.

THE METROPOLITAN MILK COMPANY

The above-named milk distributors are the largest in Minneapolis, and it is due mainly to their willingness to co-operate with medical men that the milk supply of the city is almost above criticism. We believe there has never been a case of typhoid trailed to the milk supplied by this company before such milk left their hands. This is an enviable record, and is worthy of the highest commendation.

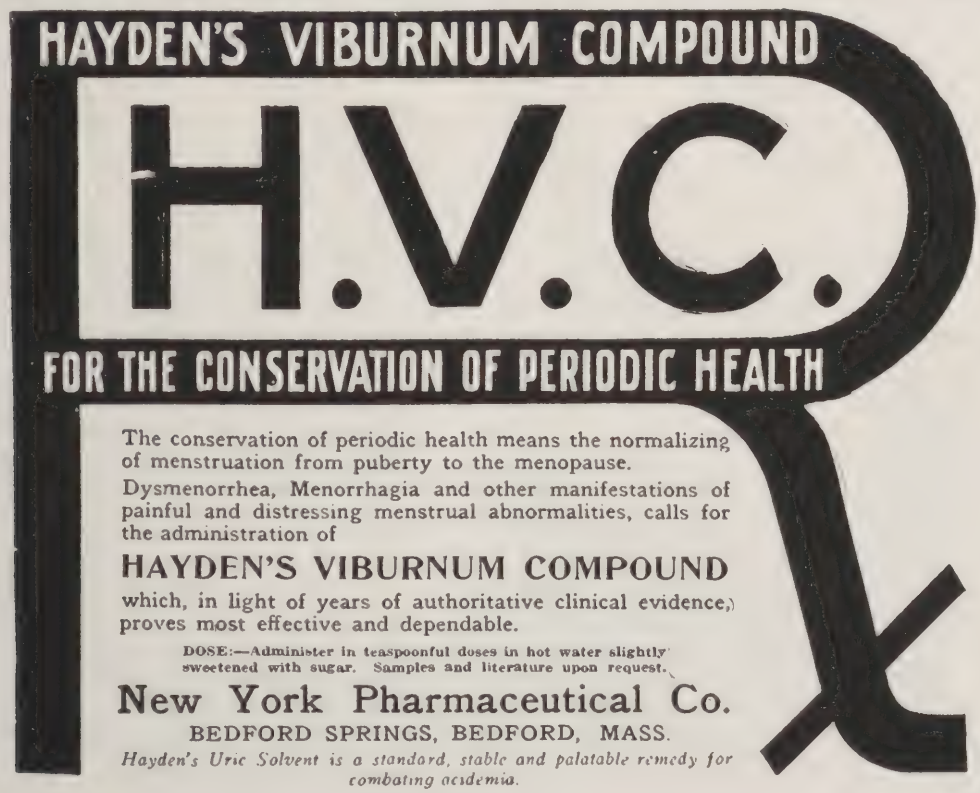
Milk is an ideal food only when its butter-fat content is standardized, and it is absolutely free from contact with dirt in any form.

MELLIN'S FOOD

Constipation is the curse of modern life, and only too often begins with the infant in arms. Of course it is due to the child's food, some of the elements (fat or protein) of which are not digested. This trouble is wholly avoided by the use of Mellin's Food when modified by cow's milk under the formula given by the makers of this well-known product of the scientific laboratory.

Mellin's Food has stood the test of time, and is recommended very largely by specialists in infant feeding.

The Mellin's Food Company send free to physicians a valuable book on the subject, entitled Formulas for Infant Feeding.



THE PLACE OF DEXTRI-MALTOSE IN INFANT FEEDING

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THE TECHNIC AND AFTER-TREATMENT IN OPERATIONS ON THE PROSTATE*

BY ARTHUR E. BENJAMIN, M.D.
MINNEAPOLIS

Prostatic surgery has not reached the stage of perfection and certainty that is associated with other surgical practice. The results are occasionally unsatisfactory or even fatal following a simple, easy, and rapid operation.

A few details are frequently neglected by surgeons which have much to do with the comfort and safety of the patient and the results obtained. The after-care is a very important part of the treatment and should be carefully supervised by the surgeon in order to hasten convalescence.

Castration was performed for enlarged prostate in 1893, with moderate shrinkage of the growth, but was just as unsurgical and became as unpopular as the removal of ovaries for fibroids of the uterus.

The cautery operation for obstruction was employed by several surgeons for a time, because of the unsatisfactory or severe consequences of other procedures.

At one time the majority of surgeons preferred the perineal route. The mortality rate was comparatively low following this method, but the close proximity of the bowel to the operative field often resulted in injury to the rectum. The functional results were poor, and stricture of the urethra with a dribbling or incontinence of urine or with a fistula would occasionally result. The post-operative complaint and discomforts of these patients soon forced the general surgeon to adopt a different method of procedure.

Suprapubic prostatectomy was first completely performed, according to Young, by Eugene Fuller of New York in 1894. To complete the operation, the perineum was incised and an opening made into the bladder, at the time, for better drainage, the suprapubic wound being sutured. This method, modified somewhat, was soon adopted by the majority of general surgeons because of the good results obtained.

The mortality rate, in 1918, as reported by Blum in 2,044 cases was as follows: perineal, 6.5 per cent; by all methods, 8.5 per cent. He shows by statistics that the use of the catheter shortens life by two years and eight months.

Kidneys.—The function of the kidneys should be ascertained in all cases, when possible, before operating, and a carefully planned course of preliminary treatment, where the function is found much impaired, should be carried out.

Where the kidneys are infected and the bladder secondarily involved, a preliminary treatment of the kidneys is a wise procedure. At any rate, when such is the case, I do not believe an operation should be performed, unless the case is an emergency one, if this infection is pronounced and the function poor until the function of the kidneys is as near normal as is possible and the danger point in the infection is overcome.

The gradual relief of the renal tension by daily catheterization may obviate a suppression that would follow a premature operation.

*Presented before the Western Surgical Association at Los Angeles, Cal., December 3 and 4, 1920.

Clarence Martin says that "Decompression of the kidneys should be brought about through interrupted catheterization carried over several days. In all probability, a large number of the deaths following the preliminary cystotomy, performed under local anesthesia, are due to sudden decompression and not to shock. The suppression that sets in indicates the marked engorgement of the renal vessels that has followed directly upon the sudden removal of the long existing intrarenal pressure. It is to obviate just such an unhappy occurrence that interrupted catheterization should be done."

Martin also states that "Certain of these polyurias presage this unhappy state, polyuria all too frequently being the forerunner of suppression."

Bladder.—When there is a cystitis the bladder should be irrigated many times before an operation is performed, or an indwelling catheter left for several days or for shorter periods with daily irrigations. This procedure is to be preferred to a two-stage operation when possible, as the second operation is usually more difficult, consumes more time, and there is a delayed recovery. In many cases it is well to make a cystoscopic examination of the bladder, as stones, diverticula, or neoplasms may be discovered in unsuspected cases. An *x*-ray outline of the bladder and kidneys also might cause the surgeon to modify the treatment.



Fig. 1. Position of operator and two assistants in doing prostatectomy.

Vaccine.—In several badly infected cases, with or without an abscess in the prostate, stock or autogenous vaccine has been of much benefit. It is advisable to determine the nature of the infection so that the proper vaccine may be administered and a guarded prognosis given. The colon bacillus is usually the predominant microörganism present. Judd states that in the Mayo Clinic "It is customary to give stock colon vaccine every three days preceding and subsequent to the operation for a time."

Apparatus.—Several years ago, I had a special apparatus made to place on top of an ordinary operating-table to perform this operation. The main advantages of it are the location and help given the operator by the second assistant, in being out of the way and able to relieve the operator or the first assistant of the necessity of using one hand in the rectum to elevate the prostate. There is less possibility of contamination, and the operation can be performed quickly. The operator can have both hands free to dissect out the tumor, changing off, and also to sew up the capsule in case of hemorrhage. I believe the bowel is less likely to be injured in this way.

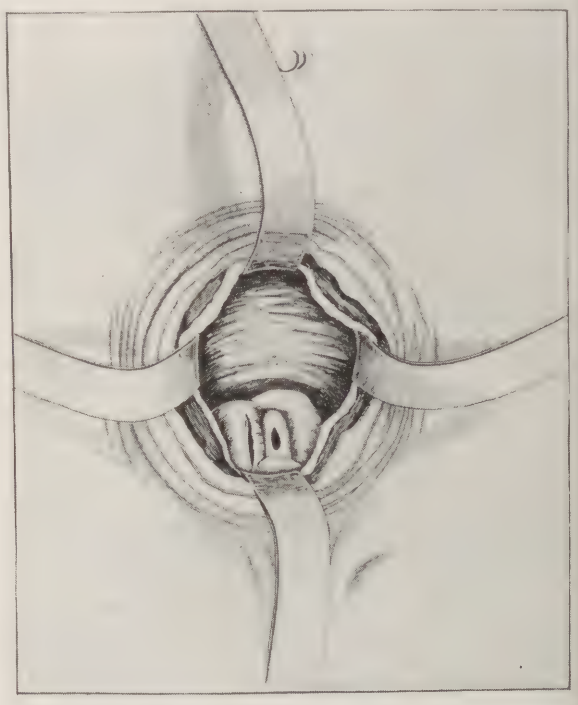


Fig. 2. Retractors in bladder, exposing prostate, and small incision in capsule.

Technic of the Operation.—When the patient is in good condition for the operation, the diet is restricted for a day or two to plain, simple, and easily digested foods. The lower bowel is emptied by one or two enemas the day before the operation. A hypodermic of morphine, gr. $\frac{1}{6}$, and atrophine sulph., gr. $\frac{1}{150}$, is given an hour before the operation. The patient's body is placed on the platform of the apparatus as illustrated, and his limbs fastened on the boards, which are well padded. The bladder is irrigated

and filled with a boric acid solution while the patient is on the operating table, and the soft rubber catheter is left in and clamped. The field of operation is properly prepared and the patient's body, as well as the limbs, is protected with sterile sheets and towels; the first assistant is placed across from the operator and the second assistant between the limbs of the apparatus and thighs of the patient. (Fig. 1.) Local anesthesia is ordinarily used, instead of a general anesthesia, until the bladder is opened. After this, gas is administered and often followed by ether or, occasionally, local anesthesia is employed to finish the operation. When the incision has reached the bladder, the peritoneum is pushed up from the fundus of the bladder, and the bladder wall is secured by three sutures of

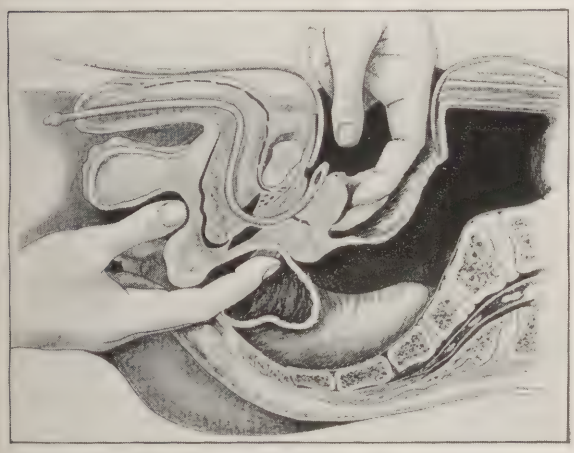


Fig. 3. Second assistant's fingers in the rectum for support.

chromic catgut before it is opened, one passing through the fascia, recti muscles and bladder wall transversely to close off the space of Retzius, and the other two passing through the bladder wall parallel to each other, between which two the bladder is incised as high up on the fundus as possible, thereby avoiding the venous plexus of Santorini. When the bladder is opened the clamp is removed from the catheter, allowing the solution to escape from the bladder and thereby keeping the wound dry. The wound can be further protected by securely clamping a rubber drain around the opening close to the bladder.

If local anesthesia is to be continued, a self-retaining retractor or single retractors are used to expose the prostate. (Fig. 2.) The prostatic capsule is anesthetized or gas is then administered.

The second assistant, with two fingers in the rectum, raises the prostatic growth. The mucous membrane is nicked anteriorly to the internal meatus or over the most prominent portion. Through this opening the finger of the operator is thrust, and the tumor separated from the surgical capsule or healthy glandular tissue. This is quite readily done in most cases unless the growth is malignant. With the assistant's fingers in the rectum, below, the operator can easily determine whether all the growth has been removed or not; a firm opposing force is present to work over, making the dissection less difficult. (Fig. 3.) Often the growth can be removed in one piece through the enlarged opening made through the mucosa. Any tags or mucous mem-

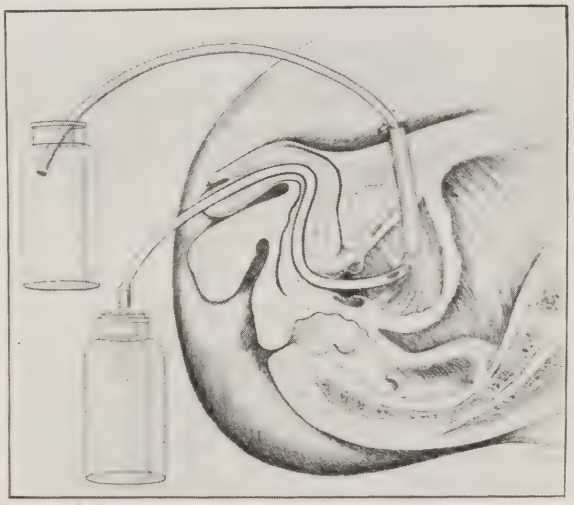


Fig. 4. Drainage tube and catheter in position.

brane are removed and excessive bleeding points in the mucosa or capsule are sutured with plain catgut. I prefer this to packing with gauze.

When bleeding continues, a strip of gauze presses the capsule into the cavity, covering as well all raw surfaces, and the loose end of the gauze is brought out through a short rubber tube in the bladder. This tube may be connected to a longer tube to carry off excessive drainage and thus keep the dressings dry.

In the ordinary case we employ a double tube arrangement which has been used by other operators, in a modified form, for drainage. A long chromic catgut suture is passed through the end of the catheter in the bladder. It is then brought out through the outer rubber tube, which is fastened in the bladder, in a position as high up as possible, with two purse-string sutures of

plain catgut, inverting the bladder wall. The opening in the bladder above and below these points is securely sutured with a double row of chromic catgut, also inverting the mucous membrane. One plain catgut suture passes through the tube and bladder wall to anchor it. The bladder is then firmly brought up and securely fastened to the abdominal wall, and the space of Retzius obliterated so that infection may not occur at that point. All this care, I believe, has much to do with the rapid healing of the suprapubic wound.

The skin and subcutaneous tissue should not be stitched too near the tube so as to facilitate drainage and thus prevent extravasation of blood, serum, or urine, which might result in subcutaneous infection and slow repair of the wound.

The tubes used for suprapubic drainage are as small as can be consistently employed, so that the closure will be more rapid when the tube is removed. The second, or inner, tube, which is much longer than the outer tube, should fill the lumen of the outer tube. It is passed inside the outer tube, extending into the bladder. The catgut sutures anchoring the catheter are between these two tubes, which sutures are tied over a cross-piece at the end of the outer bladder tube, the suture being of sufficient length to hold the catheter in the bladder at the proper point. (Fig. 4.)

Both catheter and suprapubic drainage tubes are connected with separate bottles. The catheter bottle is tightly corked so that no soiling of bedclothes or dressings can result, adding much to the comfort of the patient, and, I believe, outweighing the advantage of early removal of the suprapubic drain. The catheter is held in place firmly and without the discomfort experienced by the ordinary fixation. After the operation is completed, the bladder is again thoroughly washed with warm boracic acid solution from the catheter into the tube and vice versa, in order to wash the clots of blood out. This irrigation is usually kept up, at a low pressure, every two or three hours afterward, so that no clots form. Distress is lessened, and it prevents infection and a rise in temperature. As soon as bleeding is not in evidence, the irrigations are less frequently employed and discontinued, except once daily while the catheter and tube remain in position.

In case of necessity the inner tube may be removed so that any collected clots may be washed out from below or dislodged from above. This, however, has not frequently been found necessary under the plan above employed.

Post-operative.—The patient usually makes a very satisfactory and steady convalescence, and is allowed to get out of bed in from five to ten days.

The outer tube usually is removed as soon as firm fixation of the tissues has taken place. This is usually at the end of the tenth day or when some leaking occurs around the tube. The urethral catheter is kept in place for a number of days, thereby preventing saturation of the dressings. After the tube is removed the patient is encouraged to bring about a normal and natural evacuation of the bladder by endeavoring to empty the bladder at frequent intervals, at the same time using external pressure to force the recti together with the hands on the dressings. An indwelling catheter, worn subsequently for a day or more at a time, relieves the internal pressure and therefore allows the suprapubic wound to unite sooner. Strapping the edges of the wounds with sterile adhesive, pulling them together at this time, is of some benefit. The use of the sound to keep the prostatic urethra well dilated assists in the closure of the wound. If infection of the bladder exists, the bladder should be irrigated daily and vaccine employed. Infected kidneys may prolong the convalescence and occasionally are the cause of persistent pyuria. A recurrence of the growth may be from carcinoma, new tissue formation, or incomplete removal of the growth.

Antiseptic and astringent dressings, such as balsam of Peru, Dakin's, or Dichloramin-T, or silver nitrate may be used to advantage. Should the urine leak for too long a time through the abdominal wound or an extravesical abscess form, a second operation should be performed, in the first instance, to freshen and reunite the walls, and, in the second, to eliminate the pus-containing cavity.

CONCLUSIONS

Prostatic surgery has not reached the stage of perfection that is associated with other surgical work.

The outcome is occasionally unsatisfactory on account of the undetermined resistance and complicating conditions present.

The functional results following certain types of operations upon the prostate are often poor.

The mortality rate is relatively high for the suprapubic operation, but the functional result and comfort of the patient have influenced most surgeons to adopt this method of operating.

Every patient should be in as good a condition as possible before the operation is performed.

Vaccine treatment sometimes assists in overcoming infection.

A special apparatus, in doing the suprapubic operation, usually makes the second assistant of great value to the operator, facilitates the work, and makes it easier and more rapid in its execution. Interrupted catheterization or an indwelling catheter is employed for several days where there is much residual urine before an operation is performed.

Local anesthesia, gas, and ether are the usual anesthetics.

The incision in the bladder is high up in the fundus.

The growth is dissected out with the finger, as a rule, over the second assistant's two fingers in the rectum. The bleeding capsule is usually sutured into the depression left in the prostate.

A double tube for drainage of the suprapubic wound is employed and a catheter is retained in the bladder by a suture passed through the internal end of the catheter and secured by extending between the two suprapubic drainage tubes and anchored. Satisfactory convalescence by this method is more assured, infection less likely, and the comfort of the patient is much greater.

The bladder is irrigated frequently, preventing clotting and infection. The wound is kept dry for the greater portion of the convalescence.

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DISCUSSION

Dr. N. J. Maclean (Winnipeg, Manitoba): This subject is one of great interest. I agree with the last speaker on the two-stage operation.

Sometime ago I had two cases where there was stone-formation in the bladder following prostatectomy. One case was passing small stones continuously with a great deal of discomfort and pain, and the other case, three years after the operation, had the bladder filled with large stones—as large as small hen's eggs.

The after-treatment is important. As far as the after-treatment is concerned, in my own practice, we simply put in a lage tube and after twenty-four hours aspirate the urine that is in the bladder and put in argyrol solution. This is left in the bladder. The treatment is repeated once a day until the wound is closed. Since we have adopted this procedure we have not had post-operative stone-formation.

Dr. Leonard Freeman (Denver, Colo.) The principal point to bear in mind is that these operations are done upon old men, whose resisting power is reduced by loss of sleep, by sepsis, by old age, and by kidney troubles. Any operation that is done ought to be the simplest and quickest one possible. As regards hemorrhage: There are various methods of controlling it. One is to sew up the prostatic wound. I question whether that is as good as some of the others, as it takes a considerable amount of time and manipulation. I do not believe it is necessary.

I have used a very simple method for a number of years. A long and narrow strip of gauze is packed into the prostatic wound, its free end being held in the grasp of a pair of long, blunt-pointed forceps, the handles of which are allowed to project through the abdominal wound. A bandage (elastic if desired) is then passed around the pelvis and over the fork of the handles, thus making pressure through the forceps upon the packing and preventing it from floating out of the prostatic wound when the bladder fills with urine. In addition, the pressure can be directed in any direction by shifting the angle of the forceps. In the course of some hours the forceps can be pulled out of the wound, bringing the gauze with it.

Another point: In removing the prostrate, I believe it is easier for one to work entirely with one's own fingers than to use the fingers of an assistant. In other words, two hands belonging to one man can work more intelligently together than the hands of two different people, and, if any sort of care is used, there need be no concern regarding sepsis.

I do not favor local anesthesia. It is hard on the patient physically and mentally, to say nothing of the operator. I do not believe it is necessary. I find gas and oxygen both safe and satisfactory.

Dr. Benjamin gets beautiful results in what he does. He carries out these things in a most skillful manner. Nevertheless, I believe that the quicker and the simpler method is the better.

Dr. Benjamin (closing): I think we should get these cases used to having a catheter in the bladder before the operation. In regard to the irritation of the catheter: Patients complain very little about it when it is fastened in the way I mentioned. There is no irritation of the tissue, and that is the reason I have

adopted this method. I presume if I did not wash the bladder out several days before we operated, and leave the catheter in for sometime, they might complain more than they do.

In regard to the preparation of the patient: The urea content should be as low as possible. We must get these cases so that the function of the kidney is as near normal as possible.

I very seldom do the two-stage operation. I prefer to use the catheter, leaving it in for sometime. If you do not relieve the back-pressure before these operations, and suddenly take away that pressure, you have inactivity of the kidney.

I am glad Dr. Maclean brought out the use of argyrol. We most always use argyrol, or an equivalent, in these cases to wash them out. I remember one case simliar to the one he reported. Stones kept coming down and lodging in the bladder. We did not take an *x*-ray, as at that time we had very little use of the *x*-ray. The Wilson tube is practically the same as the double tube. This one serves the same and a better purpose. The dressings are dry. As soon as the tube comes out, we instruct the patient to evacuate the bladder frequently by pressing upon the sides of the wound at the same time: less urine will flow out of the wound, and having the catheter in the bladder, the wound closes very rapidly. Ordinarily, we use a small tube and keep it perfectly clean and draining well; the wound heals up quicker.

Dr. Freeman mentioned a simple method. That is what I have been endeavoring to accomplish in this work. At first, I could not get used to an assistant's finger in the rectum, but I have become accustomed to it, I have both hands to work with, and can do more complete and quicker work.

STUDIES ON THE RESPIRATORY ORGANS IN HEALTH AND DISEASE*

II. A Study of the Vital Capacity and Physical Fitness of Nurses with Tables Showing Calculated Vital Capacities for Normal Men and Women and a Method for Quickly Obtaining an Expression of an Individual's Physical Fitness

By J. A. Myers, Ph.D., M.D.

Associate Physician in Tuberculosis in The Minneapolis General Hospital, Instructor in Internal Medicine, University of Minnesota, and Research Fellow for Hennepin County Tuberculosis Association

MINNEAPOLIS

Having invented the spirometer, John Hutchinson, in 1846, presented to the world a very remarkable contribution on human vital capacity. Hutchinson made a large number of observations, from which he concluded that there existed no direct relationship between the circumference of the chest and the vital capacity; "that the vital capacity increases nearly in the ratio of 1 cubic inch per lb., from 105 to 155 lb., and that, from 155 to 200 lb., this increase is overpowered, and there is a loss of 39.5 cubic inches as the effect of weight," that "for every inch of height (from 5 feet to 6 feet) eight additional cubic inches of air, at 60°, are given out by a forced expiration."

As Hutchinson predicted, time has so unfolded science as to alter some of his conclusions, but the fundamental principles will always remain.

Since 1846 many observations have been made on the vital lung capacity of individuals, both in health and disease, with the result that spirometer readings are now looked upon by many clinicians as an indispensable part of a patient's examination.

In 1917 Peabody and Wentworth reported the results of a study of the vital capacity in 140 normal individuals (96 men and 34 women). The men were divided into three groups according to their height, as follows: "Group 1 included those who were 182.5 cm. (6 feet) tall or over"; "Group 2 consisted of men between 173.5 cm. (5 feet 8½ inches) and 182.5 cm. (6 feet) tall"; "Group 3 was comprised of persons whose height was between 173.5 cm. (5 feet 8½ inches) and 159.5 cm. (5 feet 3 inches)." The average vital capacity of the 14 persons in group 1 was found to be 5,100 cubic centimeters, although the highest vital capacity reading was 7,180 cubic centimeters and the lowest was 5,030 cubic centimeters. In Group 2 there were 44 individuals whose average capacity was 4,800 cubic centimeters. The highest reading in this group was 5,800 and the lowest 4,300 cubic centimeters. There were 38 individuals in the third group, and the average vital capacity was 4,000 cubic centimeters. The highest reading was 5,080, while the lowest was 3,450 centimeters.

The women were also placed in three groups as follows: The first group consisted of 10 individuals who were over 167 cm. (5 feet 6 inches) tall. Their average vital capacity was 3,275 cubic centimeters. In the second group were 14 persons between 162 cm. (5 feet 4 inches) up to and including 167 cm. (5 feet 6 inches). The average vital capacity for this group was 3,050 cubic centimeters. The third group consisted of 21 indi-

*The first paper in this series has been submitted elsewhere for publication and will appear in due time.

viduals whose height was from 154.5 cm. to and including 162 cm. (5 feet 4 inches). In the last named group the average vital capacity was 2,825 cubic centimeters.

Peabody and Wentworth concluded that from their figures "one may state fairly definitely that in normal persons the vital capacity is at least 85 per cent, and almost always 90 per cent or more, of the normal standards adopted for each group.

In 1918 Lundsgaard and Van Slyke reported their work on the vital capacity in 18 normal men and women in which they used the calculated chest volume in the following formula:

$$\frac{100 \times \text{chest volume}}{\text{vital capacity}} = ?$$

The average ratio was found to be 45.

For the details of obtaining the chest volume the reader is referred to the original article of the authors.

A further advance in our knowledge of the vital capacity was made during the World War, when, as Dreyer points out, each candidate for the British Flying Service was given the vital capacity test, which served as a decisive factor in his election to or rejection from the service. Dreyer (1919) states that "a definite minimum standard of vital capacity was fixed, more or less arbitrarily, for the admission of cadets to the Royal Air Force, and standards were also decided upon for the grading of flying officers for different types of service. In laying down rules in this connection the question of the size of the man was entirely disregarded as though of no consequence, and the standards were arrived at simply as the result of examining a number of successful pilots, and determining the average vital capacity." Dreyer made an extensive investigation of this subject, and concluded that vital capacity is not a simple function of height, as was formerly believed, but that there is a definite relationship between vital capacity and body surface, body weight, stem length, and chest measurement. Dreyer concluded, however, "that the most accurate manner in which to express the vital capacity is as a function of the body surface by means of the formula $\frac{W^n}{V.C.} = K$, where it is approximately two-thirds, or, more accurately, 0.72." In this formula W is the weight of the individual in grams, V.C. the vital capacity in cubic centimeters, and K a constant. In his series of sixteen carefully selected men and boys Dreyer finds that this means vital capacity is 0.69.

West, (1920), after making a comparison of various standards for the normal vital capacity of the lungs in which he used 85 normal men and 44 normal women, writes as follows:

"From these data, as well as from the work of Dreyer, it would appear that the most accurate method for calculating the normal vital capacity for an individual is from a standard based on the surface area. In using a value for this standard, whether as expressed in c.c. per square meter of body surface or an arithmetical value as a constant as in the formula $\frac{W^{0.72}}{V.C.} = K$, it would seem that allowance must be made for the past physical training and experience of the individual."

OBSERVATIONS

In view of the fact that Dreyer (1919) concluded "that the most accurate manner in which to express the vital capacity is as a function of the body surface," and West (1920) found "that the most accurate method for calculating the normal vital capacity for an individual is from a standard based on the surface area," only the body surface formula was employed in making the calculations presented in this study. The use of too many standards and mathematical formulæ simply leads to confusion, and causes the work to lose its significance to all groups of workers except the small group interested only in pure science.

In Dreyer's series of 16 men, who were carefully selected on the basis of physical fitness, the 0.72 power of the weight divided by the vital capacity was found to be 0.69. If we consider this constant (0.69) as representing 100 per cent physical fitness it is obvious that one can very easily obtain an individual's physical fitness percentage by the use of Dreyer's formula. This information is of great value to any organization or concern that desires to select or eliminate individuals on the basis of their physical fitness. In the practice of clinical medicine it throws so much light on the patient's condition that it should become a part of every routine examination.

Most clinicians have neither the time nor the inclination to labor over mathematical formulæ, particularly when they involve the use of logarithmetic tables. It was, therefore, thought desirable to present in table 1 the various body weights (from 100 to 200 pounds) reduced to the 0.72 power. It is obvious that when one has a patient's vital capacity and weight in pounds it is only necessary to refer to the table to secure the 0.72 power of the weight which in turn is divided

by the observed vital capacity. For example, if a patient weighs 150 pounds and has a vital capacity of 4,370 cubic centimeters the formula will appear as $\frac{(150)^{0.72}}{4,370}=K$. A glance at the column in table 1 opposite 150 pounds gives this weight reduced to the 0.72 power which is 3,015. Our formula now appears as $\frac{3,015}{4,370}=K$, or 0.69. Thus in a very short time the clinician obtains an expression of a patient's physical fitness.

It is not always necessary to work out the patient's physical fitness according to the above formula, for in many cases the vital capacity observed is approximately normal for the individual's weight, and, consequently, the physical fitness is in the neighborhood of 100 per cent. It, therefore, is necessary to know what the normal vital lung capacity should be for each individual. In the formula used above $\frac{(W)^{0.72}}{\text{vital capacity}}=K$, the value of K. was found to be 0.69. When we transpose we get the formula $\frac{W.^{0.72}}{0.69}=$ vital capacity.

TABLE I

Weight in Lbs.	Weight in Grams	Weight to 0.72 Power	Calculated Vital Capacity (Men)	Calculated Vital Capacity (Women)
100	45,325	2,251	3,263	2,648
101	45,778	2,268	3,286	2,668
102	46,231	2,284	3,310	2,687
103	46,684	2,300	3,333	2,706
104	47,138	2,316	3,365	2,725
105	47,591	2,332	3,379	2,743
106	48,044	2,348	3,402	2,762
107	48,497	2,364	3,427	2,781
108	48,951	2,381	3,450	2,801
109	49,404	2,396	3,472	2,819
110	49,857	2,412	3,495	2,838
111	50,310	2,428	3,518	2,856
112	50,764	2,443	3,540	2,874
113	51,219	2,459	3,563	2,892
114	51,670	2,475	3,586	2,912
115	52,123	2,490	3,609	2,929
116	52,577	2,506	3,631	2,948
117	53,030	2,521	3,654	2,966
118	53,483	2,537	3,676	2,985
119	53,936	2,552	3,699	3,002
120	54,390	2,568	3,721	3,021
121	54,843	2,583	3,743	3,039
122	55,296	2,599	3,766	3,058
123	55,749	2,614	3,788	3,075
124	56,203	2,629	3,810	3,093
125	56,656	2,644	3,831	3,110
126	57,109	2,660	3,854	3,130
127	57,562	2,675	3,876	3,147
128	58,016	2,690	3,898	3,165
129	58,469	2,705	3,920	3,182
130	58,922	2,720	3,942	3,200
131	59,375	2,735	3,964	3,218
132	59,829	2,750	3,986	3,235
133	60,282	2,765	4,007	3,253
134	60,735	2,780	4,029	3,271
135	61,188	2,795	4,050	3,288
136	61,642	2,810	4,072	3,306
137	62,095	2,825	4,094	3,324
138	62,548	2,840	4,115	3,342
139	63,001	2,854	4,136	3,358
140	63,455	2,871	4,160	3,377
141	63,908	2,884	4,179	3,393
142	64,361	2,899	4,210	3,411
143	64,814	2,913	4,222	3,427
144	65,268	2,928	4,243	3,445
145	65,721	2,942	4,264	3,461
146	66,174	2,957	4,285	3,479
147	66,627	2,972	4,307	3,496
148	67,081	2,986	4,327	3,513
149	67,534	3,001	4,347	3,531
150	67,997	3,015	4,370	3,547
151	68,440	3,030	4,391	3,565
152	68,894	3,044	4,411	3,581
153	69,347	3,059	4,433	3,599
154	69,800	3,073	4,453	3,615
155	70,253	3,087	4,474	3,632
156	70,707	3,102	4,495	3,649
157	71,160	3,116	4,515	3,666
158	71,613	3,130	4,536	3,682
159	72,076	3,145	4,557	3,700
160	72,520	3,159	4,578	3,716
161	72,973	3,173	4,598	3,733
162	73,426	3,187	4,619	3,749
163	73,879	3,201	4,639	3,766
164	74,333	3,215	4,659	3,782
165	74,786	3,230	4,680	3,800
166	75,239	3,244	4,701	3,816
167	75,692	3,257	4,721	3,832
168	76,146	3,272	4,742	3,849
169	76,599	3,286	4,762	3,866
170	77,050	3,300	4,782	3,882
171	77,505	3,314	4,802	3,899
172	77,959	3,328	4,822	3,915
173	78,412	3,341	4,842	3,931
174	78,815	3,356	4,863	3,948
175	79,318	3,369	4,883	3,964
176	79,772	3,383	4,903	3,980
177	80,225	3,397	4,923	3,996
178	80,678	3,411	4,943	4,013
179	81,131	3,425	4,963	4,029
180	81,585	3,438	4,983	4,045
181	82,038	3,452	5,003	....
182	82,491	3,466	5,023	....
183	82,944	3,479	5,042	....
184	83,310	3,492	5,060	....
185	83,851	3,507	5,082	....
186	84,304	3,520	5,102	....
187	84,757	3,534	5,123	....
188	85,211	3,548	5,141	....

Weight in Lbs.	Weight in Grams	Weight to 0.72 Power	Calculated Vital Capacity (Men)	Calculated Vital Capacity (Women)
189	85,664	3,561	5,161	....
190	86,117	3,575	5,181	....
191	86,570	3,588	5,200	....
192	87,024	3,602	5,220	....
193	87,477	3,615	5,239	....
194	87,930	3,629	5,259	....
195	88,383	3,642	5,278	....
196	88,837	3,656	5,298	....
197	89,290	3,669	5,317	....
198	89,743	3,682	5,337	....
199	90,196	3,696	5,357	....
200	90,650	3,709	5,375	....

The weight to the 0.72 power is obtained by referring to table 1. For the sake of convenience in both research and clinical work the vital capacity has been calculated, according to Dreyer's formula, for men weighing between 100 and 200 pounds. From a considerable number of my unpublished observations it is obvious, as others have already stated, that such factors as obesity, age, occupation, and previous disease materially alter the vital capacity reading and the physical fitness expression. In fact, West, (1920), found in his series of 85 normal men that the physical fitness expression was 0.63 rather than 0.69, as Dreyer found. It must be borne in mind, however, that a considerable number of athletes were included in West's series. It is very desirable at the present time, therefore, that normal standards be ascertained for people of different occupations, nationality, age, sex, and previous training. Such standards can only be obtained, however, through extensive observations on large numbers of individuals.

In West's series of 44 women the physical fitness expression obtained by the use of Dreyer's formula was found to be 0.807. Nearly all of the women were nurses and were rather carefully selected "in that all were required to pass physical examinations before being admitted to the training school." Table 2 shows that in my series of 94 women the mean value of K is 0.892. When the figures obtained by West and myself are combined it will be seen that the total number of women studied is 138, and the mean value of K is 0.864. If, however, the values of K for the two series are given equal weight the average value of K is 0.849. Therefore, in calculating the vital capacity for women in table 1 the weight to the 0.72 power was divided by 0.85. In women, as well as in men, the vital capacity and physical fitness are unquestionably influenced by such factors as age, weight, occupation, previous disease, and nationality. It is, therefore, desirable that normal standards be established for women of different age, occupation, weight, and nationality. The object of the following observations is to aid in establishing such normal standards for nurses.

When Table 1 was completed it was seen that a curve plotted against weight and vital capacity was nearly a straight line. It, therefore, seemed possible to formulate a more simple formula for computing normal vital capacity than the one employed by Dreyer. The following empirical formula was found to be sufficiently accurate for clinical work in calculating the vital capacity for males weighing between 100 and 200 pounds: 21.2× body weight + 1,168 equals vital capacity. The formula for calculating vital capacity for females weighing between 100 and 180 pounds is as follows: 17.6 × body weight + 900 equals vital capacity. It is, therefore, possible to calculate the vital capacity of normal men and women sufficiently accurately for ordinary clinical work when only the body weight of the patient is known.

Table 2 shows the findings in a series of 94 nurses from the Minneapolis General Hospital and the University of Minnesota Hospital. No physical examinations were made at the time the readings were taken, but those known to have had cardiac or chronic pulmonary disease in the past were eliminated; also those who were 13 per cent or more overweight were omitted from this table.

No.	Age	Height	Weight	Surface Area	Vital Cap'y	Weight 0.72, Vital Cap'y	Vital Cap'y Surface Area
1	24	160	54,840	1.56	3,900	.662	2.50
2	31	174	65,270	1.79	3,850	.760	2.15
3	24	153	53,030	1.49	3,800	.663	2.56
4	25	160	55,300	1 57	3,800	.683	2.42
5	22	164	47,138	1.50	3,600	.643	2.40
6	38	165	59,829	1.65	3,500	.768	2.12
7	24	160	58,016	1.61	3,450	.779	2.14
8	20	175	67,990	1.82	3,450	.874	1.89
9	29	167	68,440	1.72	3,450	.878	2.00
10	22	167	53,030	1.59	3,450	.730	2.17
11	29	161	58,920	1.62	3,450	.788	2.12
12	21	152	52,577	1.47	3,400	.737	2.31
13	22	164	63,455	1.70	3,400	.844	2.00
14	22	167	58,469	1.66	3,400	.795	2.04
15	25	172	53,940	1.63	3,400	.750	2.08
16	22	161	58,020	1.61	3,400	.791	2.11
17	33	170	54,840	1.61	3,400	.759	2.11
18	34	160	62,550	1.65	3,400	.835	2.06
19	20	168	56,200	1.75	3,400	.773	1.94
20	22	160	59,380	1.61	3,400	.804	2.11
21	26	166	57,110	1.63	3,350	.793	2.05
22	27	165	63,908	1.71	3,300	.873	1.92
23	23	165	57,109	1.62	3,300	.805	2.03
24	24	165	52,577	1.56	3,250	.771	2.08
25	23	163	61,640	1.66	3 250	.861	1.95

No.	Age	Height	Weight	Surface Area	Vital Cap'y	Weight 0.72, Vital Cap'y	Vital Cap'y Surface Area
26	25	170	70,710	1.81	3,200	.969	1.76
27	23	164	61,642	1.66	3,150	.892	1.89
28	21	158	62,548	1.63	3,100	.915	1.90
29	28	158	51,220	1.50	3,100	.782	2.06
30	25	162	62,100	1.66	3,100	.911	1.86
31	20	170	63,460	1.73	3,100	.926	1.79
32	25	164	59,380	1.64	3,100	.882	1.82
33	22	168	54,390	1.61	3,050	.812	1.89
34	27	170	62,095	1.71	3,050	.896	1.78
35	27	176	61,640	1.75	3,050	.921	1.74
36	25	159	62,550	1.63	3,050	.931	1.87
37	20	160	55,296	1.56	3,000	.866	1.92
38	33	160	62,095	1.65	3,000	.941	1.81
39	24	153	56,200	1.53	3,000	.876	1.96
40	29	156	61,190	1.61	3,000	.931	1.86
41	21	153	56,660	1.54	3,000	.881	1.94
42	21	154	49,400	1.46	3,000	.798	2.05
43	21	156	55,300	1.53	3,000	.866	1.96
44	37	161	63,460	1.66	3,000	.957	1.80
45	22	162	54,840	1.57	3,000	.861	1.91
46	28	173	59,380	1.71	3,000	.911	1.75
47	30	160	49,400	1.49	3,000	.798	2.01
48	23	164	65,268	1.71	2,950	.992	1.72
49	17	152	55,750	1.51	2,950	.886	1.95
50	25	160	58,470	1.61	2,950	.916	1.83
51	21	153	51,670	1.46	2,900	.852	1.98
52	20	154	48,044	1.45	2,900	.809	2.00
53	27	167	64,810	1.72	2,900	1.004	1.68
54	27	160	50,310	1.50	2,900	.837	1.93
55	21	155	58,920	1.56	2,900	.957	1.85
56	26	164	59,375	1.75	2,850	.959	1.62
57	29	165	54,843	1.71	2,850	.906	1.66
58	20	165	61,190	1.66	2,850	.980	1.71
59	21	163	64,810	1.70	2,850	1.022	1.67
60	27	161	53,030	1.54	2,800	.900	1.81
61	23	166	62,100	1.69	2,800	1.008	1.65
62	21	165	57,110	1.62	2,800	.949	1.72
63	32	164	61,190	1.67	2,800	.998	1.67
64	20	160	60,280	1.62	2,800	.987	1.72
65	22	165	62,550	1.68	2,800	1.014	1.66
66	23	160	54,840	1.56	2,800	.922	1.79
67	23	165	61,640	1.67	2,800	1.003	1.67
68	24	157	50,760	1.49	2,800	.871	1.87
69	19	160	62,100	1.64	2,800	1.010	1.70
70	29	157	52,577	1.51	2,750	.911	1.82
71	23	164	60,735	1.66	2,750	1.010	1.65
72	21	164	52,580	1.66	2,750	.911	1.65
73	18	164	53,480	1.58	2,700	.939	1.70
74	19	157	60,282	1.61	2,700	1.024	1.67
75	22	160	53,483	1.56	2,700	.939	1.73
76	22	165	58,469	1.65	2,700	1.001	1.63
77	23	165	50,310	1.53	2,700	.899	1.76
78	21	154	47,591	1.43	2,650	.884	1.85
79	26	164	61,190	1.66	2,650	1.054	1.59
80	21	163	59,830	1.64	2,650	1.010	1.61
81	28	160	59,375	1.61	2,600	1.051	1.61
82	28	162	60,735	1.65	2,600	1.069	1.57
83	28	160	54,390	1.55	2,600	.987	1.67
84	19	159	59,380	1.61	2,600	1.052	1.61
85	20	152	55,300	1.51	2,600	.961	1.72
86	20	160	51,220	1.52	2,600	.932	1.71
87	23	157	54,840	1.53	2,550	1.012	1.66
88	25	165	50,760	1.55	2,500	.975	1.61
89	23	163	54,390	1.58	2,500	1.027	1.58
90	25	150	45,778	1.36	2,500	.907	1.83
91	19	156	55,750	1.54	2,500	1.044	1.62
92	24	165	54,840	1.59	2,400	1.076	1.50
93	37	152	50,764	1.45	2,250	1.084	1.55
94	25	153	38,073	1.30	2,200	.902	1.69
Average		161.8	57,263	1.60	2,992	.892	1.87

Both dry and water spirometers were used. Peabody and Wentworth (1917) give a description of the spirometer which was used in their valuable work on vital capacity in normal and diseased individuals. This spirometer, which holds about eight thousand cubic centimeters of air, is sufficiently large and at the same time is light enough to make it easily portable. Moreover, this type of spirometer is accurate. Recently the Sanborn Company placed on the market a spirometer made according to the specifications of Peabody and Wentworth. A very good instrument of the dry type is manufactured by the American Meter Company. This instrument is light and is very convenient in that no water is necessary in its operation. There are spirometers in use at the present time which are inaccurate. It is, therefore, desirable if we hope to get uniformity of results that a high-grade and accurate spirometer, whether of the water or dry type, be universally adopted.

It will be seen that most of the individuals in this series were between the ages of twenty and thirty years. The small number outside these limits were so near that their age had little or no effect on the vital capacity.

The highest vital capacity observed was 3,900 cubic centimeters, the lowest was 2,200 cubic centimeters, while the average vital capacity for the entire series was 2,992 cubic centimeters. West's series of 44 averaged 3,338 cubic centimeters, while the series of Peabody and Wentworth averaged 3,050 cubic centimeters. It will be observed that my readings are somewhat lower than those of Peabody and Wentworth (1917) and West (1920). Attention may be called to the fact that nearly all of my readings were taken at the close of a day's work and immediately after the evening meal. It is true, as Hutchinson (1846) pointed out, that a full stomach has some little influence on the vital capacity, and fatigue could easily have a further small influence on the readings.

When grouped according to height after the method of Peabody and Wentworth (1917) 11 fell into Group 1. The average vital capacity for

this group was 326 cubic centimeters, while the mean vital capacity observed by Peabody and Wentworth for their corresponding group was 3,275 cubic centimeters.

The 34 who were in Group 2 had a mean vital capacity of 2,970 cubic centimeters. This is somewhat lower than was found by Peabody and Wentworth, as their 13 cases in this group averaged 3,050 cubic centimeters.

In Group 3 there were 36 whose average vital capacity was 2,973 cubic centimeters. The 21 individuals in the corresponding group studied by Peabody and Wentworth showed an average vital capacity of 2,825 cubic centimeters. When Groups 2 and 3 were averaged, however, my series showed an average vital capacity of only 35 cubic centimeters more than that of Peabody and Wentworth.

Inasmuch as 13 of my cases were below 154.5 centimeters in height a fourth group became necessary. The average vital capacity for this group was 2,857 cubic centimeters.

When Dreyer's formula $\left(\frac{\text{weight}^{0.72}}{\text{vital capacity}}\right)$ was employed the mean value of K was found to be 0.892. This physical fitness expression is somewhat lower than West found in his series of 44 individuals.

The relationship between the vital capacity and the area of the body surface was also calculated. For obtaining the surface area the table of Du Bois and Du Bois was used. The average for this series of 94 nurses was found to be 1.87 liters per square meter of body surface. In his series of 44 women West found the average to be 2.07 liters per square meter of body surface.

SUMMARY

The vital capacity for normal men and women calculated according to Dreyer's formula is presented in Table 1. Inasmuch as Dreyer's 16 cases were men and boys the value of K obtained by West from a study of nurses and the value of K obtained from the present study of nurses were averaged, and the mean value of K was used in calculating the vital capacity for women. The body weight to the 0.72 power are also presented in Table 1 for the convenience of the busy clinician, as well as the research worker.

The following empirical formulæ were found to be sufficiently accurate (for clinical work) in calculating the vital capacity for men and women of the weights included in Table 1: 17.6 × body weight + 900 equals vital capacity for women; 21.2 × body weight + 1,168 equals vital capacity for men.

This study includes a series of 94 normal nurses, none of whom was more than 13 per cent overweight, and all of whom were on active duty at the time the readings were taken. No physical examinations were made, but all who gave a history of chronic pulmonary or cardiac disease were eliminated.

The mean vital capacity for the entire series of 94 nurses was 2,992 cubic centimeters. When Dreyer's formula was employed the mean value of K was found to be 0.892 and when the surface area was computed the lung capacity was found to be 1.87 liters per square meter of body surface.

I wish to express my appreciation to Professors W. E. Brooks and R. E. Scammon for their suggestions and aid in the preparation of the mathematical part of this paper. I also desire to thank Miss Katherine E. Dougherty, Superintendent of Nurses Minneapolis General Hospital; Miss Louise M. Powell, Superintendent of Nurses, University Hospital, and Miss I. E. Corliss, University Dispensary, for their splendid coöperation and valuable aid in accumulating and compiling the data used in these observations.

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TREATMENT OF CONTUSED AND LACERATED WOUNDS*

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In bringing forth a subject of this nature for consideration, and where treatment is concerned, discussion always arises; therefore limitations of the subject must be first laid down and the exact nature defined. Who among us could enter into a thoughtful and productive discussion while arguing about different things, different premises upon the same thing, or some unseen or unknown thing? As an illustration, a discussion here upon dengue fever or yaws, while possibly interesting, would scarcely be instructive to the majority of us until, at least, the definition or description of the above diseases be first brought to mind. Consequently, before entering into the treatment of contused and lacerated wounds I shall ask you to bear with me until, by definition and limitation, we have brought the subject to a definite, rather than a rambling, dissertation, and at least started the line of thought from as concise a point as possible.

First, therefore, we shall have to exclude all types and kinds of wounds except those coming under the above-named classification. In doing so, however, we shall still deal with the vast majority of injuries presented to us in practice. I shall not arbitrarily define these wounds. I shall base my definition upon two sources.

One is pathological, in which the post-natal causes of disease are divided as follows: mechanical, physical, chemical and parasitic; and of the mechanical causes, such divisions as concussion, puncture, and others, among which is contusion and under which are included laceration and tearing. Concerning this condition, we further find that "contusion is the effect of force applied directly to the tissue concerned and forcing cells asunder from cells." Where this is slight (hemorrhage largely shows the result) simple contusion is designated, but with more severe disintegration, separation of parts results and laceration, with the added opportunity of bacterial introduction, is the outcome.

The other source of definition is that of the international classification of disease and injuries, as used by Bellevue Hospital and also by the Medical Department of the United States Navy, in which, under injuries, we find separate divisions for contusions and lacerated wounds, in contradistinction to compression, incised, punctured, and various other types of wounds.

To summarize: Mechanical forces cause contusions and lacerations.

Generally speaking, the treatment herewith given will be applicable to all such types of wounds, with modifications for certain localities. Although different types of treatment will be mentioned, the abiding factors concerned are efficiency, promptness, and simplicity in treatment. In speaking here of wounds I shall be chiefly concerned with those of the soft parts.

Contused wounds generally are of lesser importance than those of the lacerated type, primarily, because, from the original definition of the term, there is a minor degree of injury to the tissues, and, secondarily, there is little or no inroad for bacterial invasion. The following procedure is very efficacious: If seen early, compression and firm pressure by bandage. As an example of this I cite a simple case, that of a man who struck his thumb-nail a blow with a hammer. The case was seen soon afterward, and the patient was directed to apply firm finger-pressure to the nail. As yet no extravasation of blood has occurred in the affected part. The local pain to the part at the time was, however, increased. Other measures are the application of cold, but both this and pressure must not be overdone, as injury to the part may result. Later applications of heat are very good, especially to relieve the pain and discomfort and to promote removal of the waste products. Evaporating lotions, such as witch-hazel or lead and opium also give relief. Occasionally large extravasations of blood necessitate acupuncture or incision made under aseptic conditions to let out the accumulated material. Other instances are injury to blood-vessels and more or less continuous hemorrhage where incision into the soft parts and ligation of the artery are necessary.

In lacerated wounds the problem of treatment in the second phase of this subject is not only more interesting, but is also more complicated. All lacerated wounds are necessarily contused; in fact, by some authors, the terms are apparently used interchangeably.

The following pertinent facts prevail:

1. The injury is more extensive, sometimes involving large areas of the body.
2. The avenue for infection is open.
3. Foreign material in the wound is often the condition.

*Presented before the Soo Surgical Association at the annual meeting in Minneapolis, December 17, 1920.

4. Large areas of tissue are destroyed or distorted.

Having the above points in mind, the common results prevailing from such lacerated wounds (of course, depending to a large degree upon their extent and the causative agent) are as follows:

First. Hemorrhage, usually slight primary, but often considerable secondary.

Second. Shock, due not only to the violence of the injury, but also to the direct injury to nerve trunks.

Third. Infection, usually.

Fourth. Deformity, very likely.

Such being the salient results of lacerated wounds, the treatment should be taken up in like order.

First. In case hemorrhage is present or likely to intervene shortly, the obvious thing to do is to stop it. The tourniquet is the best quick measure. Personally I favor the ordinary rubber tubing type, an excellent example of which was used by the navy, and also by some parts of the army, in the recent war. Quickly adaptable and easily carried it will serve the emergency purpose excellently. Mention might be made of the metal type used by the German forces, but this, while efficacious, is cumbersome and needless for the usual emergency work. Bleeding vessels should be picked up and tied. Further treatment of hemorrhage, except such as will be considered later in repair of the wound, will not be dwelt upon at this time.

Second. Consider shock. This is an ever-present specter to be on guard against. If slight, rest and local stimulants will prevail; if profound, such measures as lowering the head, keeping up the body heat, hypodermics of morphine, saline intravenously or with $\frac{1}{50,000}$ adrenalin solution, should be employed. Crile's wonderful idea of anoci-association should be made use of, if possible, and sometimes blocking of exposed nerve trunks is of value.

Hemorrhage and shock, although two distinct entities, are subjects of such large proportions that one may only mention them in a paper of this kind.

Third. Infection, which always exists or soon appears in lacerated wounds, is the next consideration and should be dealt with fully. I wish to bring up at this time one feature of infection. Further consideration of infection will be dealt with in the subsequent outline of treatment. This feature is the ever-present danger of tetanus. Antitetanic serum should be given as soon as possible. I make it a rule to give it in such cases as soon as obtainable, and, if the case is not at hand, take it with me. Fifteen hundred units is a fair initial dose for the adult, and in the children lower in proportion. I think the results obtained from its use during the war proved its value conclusively. Berard, an eminent French surgeon, thinks this should never be omitted, even in the most trivial cases. An interesting sidelight on vaccine therapy of infected wounds is brought out by Robineau, another French surgeon, who recommends the use of a mixed vaccine of streptococcus, staphylococcus, and pyocyaneus in such cases, as he, no doubt truly, claims that practically all such wounds are infected with some of these organisms. He says that the local and general reaction has a very salutary effect on the subsequent course.

Fourth. The last feature noted in wounds of this type was the deformity likely to exist; whether this includes fractures, loss of extremities, or other phases it is an important result.

Granting that the above features briefly noted, such as immediate danger of hemorrhage or shock have been averted or did not intervene, and antitetanic serum was administered, the next consideration is the actual repair of the injury.

The two facts proven, at least experimentally, and to some extent clinically, are worthy of note: One is that larger wounds close relatively more rapidly than smaller ones, and shallow wounds more quickly than deep; and the other is that toxicity is present in crushed aseptic tissue. The problem of the actual treatment of a lacerated wound resolves itself into the following procedures:

1. After hemostasis, cleansing and ridding the wound of foreign material as dirt, clothing, débris, etc.

2. Repairing the damage to injured parts.

3. Disinfection and prevention of infection, and neutralization of toxins.

4. Support and immobilization.

Prepare yourself and your equipment, regardless of how dirty the wound, as carefully as for a major operation in a clean case. Next, cleanse the wound. Often oil and grease cover the surrounding parts and even the wound itself. Gasoline is very efficient in removing this from the surrounding areas. Soap and water should be used, not necessarily by hard scrubbing, but by a careful and painstaking effort to secure thorough cleanliness, even though it takes more time. The pieces of foreign material should be removed, special care being taken that none re-

main. Warm saline solution aids considerably in the cleansing of the wound itself.

There is nothing more efficient to use as a primary disinfectant than tincture of iodine. Some variance of opinion exists as to the strength to be employed, as from 3 per cent to 10 per cent, but, for the primary disinfection I prefer the usual 7 per cent U. S. P. strength of the tincture. In fact, it may often be wise, where the patient is to be moved, to apply this primarily to the wound first, and cleanse it of foreign material when the destination is reached. This was well demonstrated in similar cases of war wounds.

The ragged and torn parts must then be attended to. Pieces of loose tissue should be excised, and the parts approximated to as near their normal anatomical relationship as possible. The war method of débridement, that is, the cleaning out of devitalized tissue as first proposed by Reynes, in 1914, and later extensively used in the war zone, opens up a wide field of treatment. Personally I favor this mode of procedure, but we must consider the following disadvantages, as brought out by Warnshuis and Portmann in the *Journal of the A. M. A.:*

1. Muscle hernia.
2. Facial injury.
3. Bad scars.
4. Exposed and painful nerves.
5. Cicatricial formation.
6. Sinuses.

No doubt, some of these results were unavoidable, due to pressing war-time conditions, but, nevertheless, they must be taken into consideration before unreservedly approving of this method. In the careful removal of devitalized parts, particular attention to fat sheaths about exposed nerves and painstaking coaptation of anatomical parts by suture, to the end that a good physiological and functional result may be assured, are very vital. No doubt, when there exist large areas of skin-destruction, where grafting is impossible, when the mutilated parts would prevent the restoration of function or when the morbid infection is widespread, amputation may be necessary. Often amputation, especially of the terminal joints, would be the easy mode of procedure, yet, extra care and suturing eventually give the patient a useful part.

I recall this fall where a number of such injuries occurred in hand cases, and yet in every one the part was largely retained and a useful, if not possibly a cosmetic result was obtained. Warning must be given against tight suturing, for sloughing nearly always follows such procedure.

Personally I am in favor of the Carrel-Dakin method of treating badly lacerated wounds. This, however, may be modified to meet certain conditions. I wish to present one case, in illustration of this point:

Patient, male, aged 40, had right arm torn, just above the elbow, the laceration extending down below the joint to the middle of the forearm, by a belt of a threshing machine. The bones about the elbow were exposed, also the blood-vessels and the nerves, although not severed. There was a skin and muscle flap nearly down to the wrist. The wound was full of cloth, grain, and dirt. Scalp lacerations were also present. There was no hemorrhage of consequence nor shock. The patient was given 1,500 units of antitetanic serum, removed, and operated upon. The arm and wound were carefully cleansed with soap and water and iodized. Devitalized tissue was removed and the muscles and other parts coaptated and sutured. The nerves were protected. Loose skin sutures were applied, and a few stay sutures inserted. Three drainage tubes were introduced. The wound was irrigated through tubes with Dakin's solution, t. i. d., for four days. Tubes were then removed and irrigated, b. i. d., for ten days. The skin was protected, but dressing was saturated with Dakin's solution during the time of irrigation. Later he was treated daily with balsam of Peru for five days and then discharged. At the present time the patient has no trouble and has a good functional result.

The solution used is the formula as given by Dr. G. Marion in "Indications Generales du Traitement des Plaïes de Guerre," as follows:

Sodium carbonate grams, 14:00
Aquæ, q. s., mils, 1000:00
Mix and add
Calx chlorata, grams, 20:00

Let stand one-half hour and filter. Add four grams of boric acid to filtrate.

There is one difficulty with this preparation, inasmuch as the strength of the calx chlorata varies; the solution must be titrated each time.

The "chlorazene" tablets may be found efficient especially in smaller wounds—a preparation being formed with H_2O similar to dichloramine-T. As healing progresses "chlorazene surgical paste" is often of advantage. I used this in partially healed wounds of returning soldiers, and it often gave excellent results. Balsam of Peru dressing for the later stages is also very efficient. For exuberant granulations touching with silver nitrate solution from 10-50 per cent will usually suffice.

One other complication sometimes intervenes, and that is gas-bacillus infection. If present, long incisions over the area should be made and the involved parts irrigated with some solution,

such as Dakin's. Some French surgeons report good results from ether. The use of antitoxin is receiving favorable reports. Mention may also be made of the sun treatment of healing wounds. My experience with this type is limited, and on account of climatic conditions it may not be suitable here. However, I recall three cases of war wounds, given this treatment on shipboard with apparently favorable improvement after a nine-day voyage.

The final feature of the treatment of lacerated wounds is rest, and this is best obtained by immobilization. Any ordinary form of splint or dressing which secures rest and enables easy access to wound for dressing and drainage, is suitable except in fracture cases, which must have certain types of support for that particular kind of injury.

The feature which later affects the industrial efficiency of the patient, after partial or general recovery, is that of passive exercise of the part, and later, if necessary, muscle training.

To sum up the salient points in the treatment of lacerated wounds we must recall the following incident conditions:

1. Hemorrhage.
2. Shock.
3. Infection.
4. Deformity.

And of the subsequent treatment of the same, in order of performance:

First. Secure hemostasis and combat shock.

Second. Prevent tetanus by serum.

Third. Secure cleanliness of the patient, wound, and operator, by soap and water, and saline.

Fourth. Prevent infection by the proper use of iodine and Dakin's solution.

Fifth. Obtain usefulness by removing devitalized tissue and the proper adjusting of injured parts.

Sixth. Secure rest by immobilization.

Seventh. Work always for a good functional result.

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DISCUSSION

Dr. Pierre C. Pilon (Paynesville, Minn.): Some specific antiseptic, if necessary, should be used in the wound, especially in cases that come under the observation of railroad surgeons. Tetanus, as we have all learned, possibly by experience or at least by observation, is a very frequent complication in lacerated wounds. When possible it is advisable and, in fact, urgent to use the antitetanic serum, which is on the market and has proven its value to those who have been in military service and also to practitioners in general. It is not always obtainable, and yet we must always think of tetanus in treating any open or lacerated wound, particularly in people on the farm or in the ordinary walks of life. In those cases it is my belief that we should use that which is in every surgeon's office,—a solution of carbolic acid,—which is a specific almost in tetanic infection. Therefore, in the absence of the serum and even in the presence of the serum, I think that carbolic acid should be used at the preliminary dressing in irrigation of the wound.

While the Carrel-Dakin solution is very useful, I consider that it is more advisable in the later treatment of wounds and with packing. We cannot use the Carrel-Dakin solution as a wash. To obtain full benefits from it there are requirements in its employment: first, débridement, the removal of all fragments of dead tissue, which are easily recognizable, with a pair of forceps. Every fiber of tissue of any kind which does not respond to the irritation which forceps normally causes, should be removed. Then when the wound has been well cleansed, open it, spread it, distend it with gauze, and let the solution penetrate to every part of it. If we simply use the Carrel-Dakin solution as a wash, in a superficial manner, the germs will not be reached. The essayist stated that he used the Carrel-Dakin solution three times a day. I think Dr. Carrel has very strongly insisted upon the fact that the action of the solution is a very limited one and that within three hours after the solution has been used, if the wound is not distended, re-infection will take place, and the bacteria will just simply have lost some of their vitality, some of their virulence, but will soon regain it unless the solution is again brought into contact with them. For that reason a two-hour injection, or three-hour at most, is the limit within which we should feel satisfied in using this solution. The cleansing of the wound, the removal of devitalized tissues, and keeping the wound aseptic with the Carrel-Dakin, often renewed, are the essential factors in treatment. Then in forty-eight to seventy-two hours we shall be able to close the wound with a few sutures in such a way that healing will take place very rapidly.

Dr. Joseph F. Quin (Milwaukee, Wis.): In lacerated wounds in diabetics with acidosis I have had experience with Dakin's solution, with permanganate of potash, and with other dressings; and, whether due to the dressing used or as a result of the medical treatment instituted, I have found that under my care diabetics have done best by using a dressing of liquor calcis.

Dr. Constans (closing): There can be no doubt that the use of Dakin's solution here and there and hit or miss, is not a good thing. I purposely left out of the reading of the paper the exact ingredients of Dakin's solution, in order to save time. However, it must be titrated and made up fresh each time, in order to get a good, standard solution, because the ingredients readily deteriorate. As far as being a panacea in the treatment of all wounds is concerned, I do not think it is, any more than radical removal of all parts of devitalized tissue is a panacea.

THE COMMISSION PROBLEM*

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There is a practice carried on by men within the medical profession of commercializing the practice of medicine and surgery. To them the professional spirit is lost in the commercial aspirations of the individuals. Traditions, professional sentiment, and lofty ideals mean nothing to them as long as their business can be placed on a good, practical, financial basis. By them a patient is considered like any other commodity to be bartered and traded like ordinary chattels. The commission being considered of primary importance and the patient of secondary importance, the latter is turned over to the highest bidder. This pernicious practice, designated by various terms as *commission, dichotomy, fee-splitting, etc.,* constitutes the one great stain on our profession today.

The game is played about as follows: A person is attacked, we will say, with an acute disease. The family physician is called in, who, after a more or less hurried examination, finds that an operation is necessary, and so urges the moving of the patient to a hospital. In a nearby city with one or more hospitals are, we will say by way of illustration, three surgeons each of whom is qualified to do the required surgical work: Dr. A., who pays no commission; Dr. B., who pays a 25 per cent commission; and Dr. C., who pays a liberal 50 per cent. The family physician, implicitly trusted as a friend in need, proceeds to instruct his patient as follows:

I will refer you, or accompany you, if necessary, to Dr. C. He is the most skilled surgeon and will give you the best service. Should Dr. C., for one reason or another, not be available, then you must seek the services of Dr. B., who has also had considerable experience in surgery and who is also capable of rendering satisfactory service.

Should the patient suggest a preference for Dr. A., the family advisor on matters pertaining to health and disease will, with an air of frank concern as one who knows whereof he speaks, retort in language like this:

I would not advise you to place your case in the hands of Dr. A. I cannot recommend him, and, if you decide to go to him, you must do so entirely on your own responsibility. You probably know that most of the general practitioners in this community refer their surgical cases to Dr. C., and, while a few refer theirs to Dr. B., very few, if any, take their patients to Dr. A. This indicates plainly that only Drs. C. and B. are recognized by doctors in general as being real surgeons.

Let us take it for granted that the doctor stated the case correctly. Then, if there were no consideration of a commission to be taken into account in giving this talk, the doctor would be giving good advice to his patient, and no fault could be found with such a confidential transaction. The chances are, however, that Dr. A., who does not deal in secret commissions, but conducts his practice openly and above board on a purely professional basis, getting all his work on his merits only, I say the chances are that he is the most skilled surgeon of the three; but here is the rub. The matter of ability and service are not always deciding factors governing the judgment and conduct of the commission doctor. He wishes the patient well, to be sure, but his own interests must not be overlooked. It might be that the patient would fare fully as well in the hands of Dr. A. as in those of Dr. C., but there is his own personal fee forthcoming in the case of Dr. C., while in the case of Dr. A. he would receive no financial remuneration for his advice and reference.

If this sort of practice is not the equivalent of auctioneering the patient to the highest bidder, then what is it? If this sort of practice is not buying and selling the patient for the operating-table, then what is it? If this sort of practice is not betraying the patient's confidence, com-

*Read before the Watertown District Medical Society, December 14, 1920.

mercializing the practice of surgery and dealing high-handedly, then what is it?

But, for the sake of argument, let us grant that Dr. A., who does not pay a commission, is inferior as a surgeon to Dr. C., who pays a very liberal commission, though this would be improbable on the face of it. The very fact that there is an understanding of a secret commission between the family physician and the surgeon is sufficient evidence of a most reprehensible deal, and proof positive that "there is something rotten in Denmark." The family physician who weighs his patient's interests on the scale of his own personal gains, is not worthy of the exalted and trusted position he holds in his community, nor is he worthy of being counted a disciple of Hippocrates, Galen, Harvey, Paré, Hunter, Lister, Pasteur, Koch, Osler, Murphy, and all the rest of that grand galaxy of men who have unselfishly devoted their lives to the advancement of the science and art of medicine, and who have made the profession of medicine the noblest of them all save one. And the surgeon whose moral and scientific attainments are such that he must find it necessary to employ agents to refer, guide, or bring patients to his office or hospital—that surgeon's qualifications, as a man or a surgeon, or both, are such that he should not be supported in his ill-founded business, but should be shunned as a disgrace to his profession, a menace to any hospital, and a danger to his community. Then unsuspecting and unfortunate sick would be accorded better service and would be spared the burden of exorbitant fees, which the commission surgeon must charge in order to square himself financially. The surgeon who is clean, capable, and honorable does not resort to underhanded and disreputable methods to secure his work; his interests are centered on his patients, not on his agent; and his fees will be found just and reasonable.

But the argument is often advanced that, as long as the patient receives satisfactory service, the matter of secret commission between the doctors does not concern him. Aside from the many evils resulting from the commission business, of which the patient is entirely ignorant, he has, indeed, a right to know the truth, and all the truth, in the matter of why he is referred to one surgeon in preference to another. He has a right to expect that his physician will not take advantage of his misfortune for the sake of pocketing a commission for himself. He has a right to expect that his trusted family physician will deal with him in accordance with the principles of the Golden Rule. He has a right to expect that the surgeon who is to perform the operation will go about his work with hands clean and unsullied in this respect, as well as in a surgical sense. He has a right to expect that our hospitals shall not be institutions of graft, but that, besides providing efficient nursing and ample medical and surgical facilities, they will give him a fair and square deal in the ordinary business relations with him.

The matter of paying and accepting commissions between doctors and doctors, or between doctors and any other individuals, is so reprehensible and detrimental in its effect that it should receive the condemnation of the profession and the public alike. Any doctor who will speculate with the misfortunes of the sick; who will allow the dollar to become the determining factor when dealing with them; who will bid for patients for the operating table; who will turn his patients over to the highest bidder; who will place his dealings with the unfortunate sick purely on a commercial basis—such doctor is unworthy of either confidence or recognition and deserves to be subjected to the limelight of open publicity.

But is there no organization or agency that will stand sponsor for the commission business and so in some manner justify it? No, the commission problem in medical practice stands condemned on every hand as pernicious, uncharitable, unethical, unprofessional, and illegal traffic. It runs counter to the oath of Hippocrates, to which every medical man in ancient times had to subscribe before he was allowed to begin the practice of his art, where it reads:

> I will follow the system of regimen which, according to my ability and judgment, I consider for the benefit of my patients, and abstain from whatever is deleterious and mischievous.

This practice is contrary to the medical Code of Ethics as follows:

> It is wrong for a medical practitioner to accept a commission or consideration for the introduction of a patient to a consultant, to a private hospital, lunatic asylum, sanatorium, or other institution; or to a dentist, chemist, instrument-maker, lodging-house keeper, nurse, midwife, tourist agent, wine merchant, or other person or company; and it is equally wrong to pay a consideration for the introduction of patients to himself. In France a custom exists called "Dichotomy," or a division of fees, according to which the consultant or specialist pays the general practitioner sending a patient a percentage of the fees received from him. In spite of the disapproval of this custom expressed by many medical societies, it is said to be generally followed, and "Gyp" in one of her short stories has drawn a vivid picture of the mental struggles and remorse of a needy and weak, but hitherto honorable, practitioner who

yields to the temptations of "le docteur taut pour cent." Such a practice exposes practitioners to the suspicion of arranging consultations and operations in their interests when they are not strictly necessary and of sanctioning the extortion of excessive fees on the part of the consultant or operator, who must square himself somehow.

The commission traffic is, furthermore, a crime against the laws of several states. It is prohibited by law in the following states:

Minnesota	Wisconsin
Nebraska	West Virginia
Alabama	Ohio
Kansas	Iowa
Tennessee	Colorado
Michigan	Georgia

and South Dakota.

I quote the following extracts from the law governing the practice of medicine in our own state of South Dakota:

Such Board shall have the power to revoke the license of any physician or surgeon heretofore or hereafter granted upon accusation made under oath by a reputable person if it shall satisfactorily appear to the Board that such physician or surgeon has been guilty of unprofessional, immoral, or dishonorable conduct, etc.

The phrase "unprofessional or dishonorable conduct" as used in this article shall be construed to include—

The law then depicts eleven different acts to be included, the eleventh of which reads as follows:

Splitting fees or giving to any person furnishing a patient any portion of the fees received from such patient, or paying or giving to any person any consideration whatever for furnishing any patient.

The American College of Surgeons, which has set as its aim the standardization of surgery, demands the following pledge as a requirement for Fellowship:

I pledge myself, as far as I am able, to avoid the sins of selfishness, to shun unwarranted publicity, dishonest money making, and commercialism, as disgraceful to our profession; to refuse utterly all secret money trades with consultants and practitioners.

At a meeting of the Clinical Congress in Chicago in 1917 that body adopted the following resolution:

BE IT RESOLVED, First, that the Committee of the Clinical Congress of Surgeons of North America is instructed to provide that hereafter the Clinics of that Congress be open only to those surgeons who in their respective practice and intent are opposed to the division of fees. Second, that the meaning of the division of fees be interpreted in substance as follows:

"I hereby declare that I do not and that I will not engage in the practice of the division of fees under any guise whatever; that I neither collect fees for others referring patients to me nor permit others to collect fees for me, nor make joint fees with physicians or surgeons referring patients to me for operation or consultation."

The committee on hospital standardization appointed by the American College of Surgeons makes this the first provision for a minimum hospital standard:

That all physicians and surgeons privileged to practice in an accredited hospital are to sign a declaration against the practice of the division of fees, these signed declarations to be forwarded to the College. This declaration shall read as follows:

"I hereby declare that during such time as I consider myself eligible to the privileges of ———— hospital I shall conform to the principle not to engage in the practice of the division of fees under any guise whatever. By this principle I understand that I am not to collect fees for others referring patients to me, nor to permit others to collect fees for me, nor to make joint fees with physicians or surgeons referring patients to me for operation or consultation, nor knowingly to permit any agent or associate of mine to do so."

Such, then, is the practice carried on on a rather extensive scale within the medical profession today, not in accordance with the spirit or traditions of the profession, nor by the approval of any medical organization; but in direct violation of these as well as in open defiance of both civil and moral laws. But what shall we say of hospitals that not only tolerate, but even sanction, such a practice and, what is more, in certain instances openly advocate the adoption of this practice on the plea that it will increase their patronage by appealing to the self-interests of some weak or unscrupulous general practitioner who is thus willing to become a party in the game for the financial remuneration there is in it for him? It can be understood and excused on no other ground than that the parties concerned have never stopped to consider the other side of the question and, therefore, have been innocent of any sinister intentions. It is for this reason,—of calling your attention to the other side of the commission problem,—that I have spoken as plainly as I have, and that I have quoted as extensively as I have, that you may take the question under consideration, investigate the policy of your own institutions in this respect, and then take your stand accordingly.

The commission system, fee-splitting, or division of fees—all meaning one and the same thing—stands condemned on its own merits. The resolutions adopted by the various medical and surgical organizations, especially by the American College of Surgeons in its commendable efforts at standardizing surgeons and hospitals, mark "the handwriting on the wall," and I venture the prediction that the day is not far distant when every hospital and community will rebel

against such a practice; and, as for your hospital, it will, in the words of the Minneapolis miller, "Eventually, why not now?"

It is, I admit, a reflection on our profession that the State shall find it necessary to pass laws to protect our patients from professional conspiracy. It is a reproach against us as practitioners that our medical societies must adopt resolutions warning us against the division of fees. It is humiliating to be compelled to sign a pledge that we will not indulge in fee-splitting, as a requirement for the admission to membership on the staff of an accredited hospital; but, until the nefarious practice of fee-splitting has been thoroughly uprooted and consigned to the depths of oblivion, every self-respecting physician and surgeon will submit to these embarrassments and lend his efforts in support of any measure that will aid in cleansing our professional reputation of this disgraceful stain.

MISCELLANY

MEMORIAL TO ARTHUR J. GILLETTE, M. D.

By the Faculty of the Medical School of the University of Minnesota

The name of Arthur J. Gillette has to be added by the Faculty of the Medical School of the University of Minnesota to the long chapter roll of its remembered and honored dead. To review the record of his life is to measure the regret of his associates that he has gone.

Success comes to many, as it came to him; but success with distinction is won, as he won it, by few. The genial nature, the kindly humor, the punctilious courtesy, the careful professionalism, like the diagnostic fingers and the analytic mind of the man, were peculiarly his own. There was a strongly personal quality in everything he did, which made for the large sum of appreciation he received from his fellows.

He was essentially a son of his State. One of the pioneer students of medicine in Minnesota, he attended the Minnesota Hospital College from 1883 to 1885; he transferred his allegiance to the reorganized St. Paul Medical College in 1886; and he graduated in that year. In 1903 he took the ad eundem degree of the University of Minnesota.

In 1895 he began his notable career as a medical educator, accepting, first, an instructorship in orthopedia, becoming a clinical professor in 1897; a full professor of orthopedic surgery in 1898; and taking charge of this division in 1913.

In 1915 he resigned, as he said, "in favor of some younger and better man." Urged by the Faculty to withdraw his resignation, he consented to continue his work, but left his resignation in the hands of the School to be considered whenever the time should come to determine the limit of his usefulness. That time did not come, and his resignation, still on file, has been accepted by death.

The one great ambition of his life, The Hospital for the Crippled and Deformed, at Phalen Park, the first institution of its kind in America, stands as his personal and professional monument. He conceived it; he inspired the gift of the acreage upon which it stands; he framed and promoted the legislation which created it; he superintended its construction; he directed its activities throughout its history; he determined that its staff should be of the University Faculty. A model of its kind, a noble institution of the State, an educational asset to the University, it has been, under his inspiration, more than all these,—a place of light and leadership, of human love and human service.

Service was the key-note of the life of Arthur Gillette; its one great purpose to promote the happiness of the handicapped. The smiles and the laughter of little children whose lives he lengthened, whose sufferings he assuaged, whose deformities he corrected, whose health he restored, whose usefulness and satisfaction he assured, will be his welcome in the world to which he has gone, as they were the light and the music of the world that he has left.

THE
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THE WORLD AND ITS ILLS

There seems to be sweeping over the country a wave of pessimism and distrust,—pessimism as to what the world is going to do, distrust of one's fellow-man. Comparatively little of the wholesome, optimistic, coöperative spirit exists. This situation cannot be due entirely to the after-effects of the war. Yet, undoubtedly, there has been created somehow a "jar in the atmosphere," not only by conditions which were unavoidable, but also by conditions which have developed since the great struggle. This, together with illness and poverty, even in its mildest form, has cast its spell upon the people and has made them restless, extravagant, and dissipated. The papers are full of marital disorders showing that people unsuited to one another have been attempting to live a life of miserable existence. The old adage still holds good: "Married in haste, repent in court." But the repentance somehow does not come, even though the matrimonial venture be a hasty one. Then, too, there is a widespread disturbance of labor, industry, and capital. The heads of industrial concerns have been as much tried as have been the laboring men. Money has been extraordinarily scarce, and everyone resents it; and yet, in spite of all this, there have been evidences of the grossest extravagance, the greatest indifference as to daily life and daily work. The newspapers keep before us the prohibition situation. The Government is unable to expend sufficient money to prohibit the manufacture or the sale of liquor. The result is, that men are imbued with the idea of putting something over on the Government, by making a horrible and poisonous concoction, known the country over, by all sorts of names from "home brew" to "distilled water." Yet, for some reason, the elements in this concoction are not properly combined, and the effect has been disastrous. Throughout the country there is continual reference to prohibition, but in many of the cities there is scarcely anything resembling prohibition, and in many of the smaller places there is smuggling and thieving of the prohibited article.

Canada has ruled that liquor may be transported to the borderline of the United States, and the bootleggers have taken advantage of this ruling. People are drinking now who have never drunk before. Boys and girls, young and old, rich and poor, are all trying to fool themselves with the idea that they are living, when as a matter of fact they are wasting their talents, their energy, and their strength, instead of getting down to a rock-bottom basis and going to work.

The Government is confronted with a horrible phantasmagoria of taxes, including the income tax, tending to make people either very honest or very dishonest. Each man perhaps tries his best to exclude and eliminate and deduct from his income all that is possible. Doubtless the Government is too busy to investigate each individual case.

Also, the people have been sick with mild troubles, yet suffering from a multitude of agonies. A search among the medical men will show that there is comparatively little serious illness, and many families formerly employing physicians now are doing without their services.

It is all in the air, and we do not know what to do or where to go or what to think. A long time will elapse before the burglars of the country will assume normal occupations, instead of being possessed of this "get-rich-quick" idea, of which they seem to be possessed. When one speaks of burglars, one does not necessarily mean one who steals money. He may steal anything or everything, even one's good name. Crime appears to be as progressive as it ever was, perhaps more so; and yet the cheerful optimist, commonly known as the cheerful idiot, thinks that the world will soon come to its senses. One wonders if he knows what he is talking about.

A very serious debate took place recently in

New York between ex-Professor Nearing and Clarence Darrow, the great Chicago attorney. Mr. Darrow took the negative side of "Is Life Worth Living?" Mr. Nearing took the stand that there is only one way to live, and that is to follow socialistic principles. The newspapers ridiculed the whole thing, and made the debaters the laughing-stock of the whole country.

One may have to confess that there is something behind all this that makes one restless, something which can be compared to an illness like the old-fashioned run of typhoid fever. It requires about so long to go through it, and a little longer to convalesce, and some time longer to be fully restored to health. So it will be in the day's work with all its indiscrepancies and all its depressing influences, with all the uncertainty and doubt.

The remedy is a psychological one, namely, determination on the part of every individual to cultivate a desire for work in spite of a difficult obstacle to surmount. On the other hand there will be a certain number of people who will agree with the late "B. L. T." It is said that he wrote a column in the newspaper which furnished a means of escape in two directions,—the cosmic and the comic. Men have taken refuge by looking away to the illimitable stars, or looking into themselves to find a sense of humor. The whole story is summed up in that triumph of light verse, B. L. T.'s "Canopus," which we take pleasure in reprinting for the amusement and comfort of our medical friends:

"CANOPUS"

When quacks with pills political would dope us,
When politics absorbs the livelong day,
I like to think about the star Canopus,
So far, so far away.

Greatest of visioned suns, they say who lift 'em:
To weigh it science always must depair.
Its shell would hold our whole dinged solar system,
Nor ever know 'twas there.

When temporary chairmen utter speeches,
And frenzied henchmen howl their battle hymns,
My thoughts float out across the cosmic reaches,
To where Canopus swims.

When men are calling names and making faces,
And all the world's a-jangle and a-jar,
I meditate on interstellar spaces,
And smoke a mild seegar.

THE NURSES' CONVENTION

The twenty-seventh annual meeting of the National League of Nurses' Education took place at Kansas City, Missouri, April 11th to April 14th, inclusive, 1921.

The program presents the names of the officers, who are scattered from California, through Minnesota, and on to Baltimore and New York, so that, evidently, the best minds in the nursing field are interested in the annual meetings. Minneapolis was represented on the Advisory Council by Miss Bertha Matlick, the superintendent of Hillcrest Hospital and the vice-president is Miss Louise M. Powell, superintendent of School of Nursing, of University Medical School.

The topics for consideration were varied in their nature and were topics allied to the programs of medical meetings. The nurses, too, have their business affairs to look after. They have their round-table talks, and their conferences; and evidently the most careful attention is given to the details of the training-school for nurses. They also take into consideration hospital supervision, hospital management, and, what is of interest just at the present moment, public-health nursing.

They likewise point out the needs and opportunities for the training of attendants, that is, nurses' helpers, a problem which we hope will be so planned that it may be possible that these nurses' helpers or trained attendants will be a prominent and conspicuous feature in the field of nursing.

Miss Clara D. Noyes, who is president of the American Nurses' Association and a director in the nursing department of the American Red Cross, says that modern nursing is one of the paramount needs of war-torn, woe-wrecked Europe. The same applies to war-strained United States. Miss Noyes says in her address that it is over-wrought, under-nourished people who fall a prey to every ill to which human flesh is heir; yet the nursing service hitherto available for their relief has been chiefly recruited from native sources, and almost wholly from a class inadequately trained and quite generally regarded as having a fixed inferior status.

This statement applies very widely and may be food for thought for more schools, and an argument for the betterment of the nursing situation all over the country; yet, for some reason, it has been very difficult for many hospitals to attract applicants for the schools. This condition is due, in part, to the fact that these people are still looking for easy times and easy money. The situation has become so acute that not only have the Minneapolis hospitals taken it up, but doubt-

less it is a problem for other cities,—where and how to get pupil nurses. It is evident that they must be recruited from the country, and they must be imbued with a spirit of interest for a real professional life, and they must have sufficient physical and mental foundation to make them desirable students. There are, apparently, too many women who go in for nursing who are wholly unfit.

The University of Minnesota has had for years, and was the first in the field to establish, a university controlled school of nurses. As it was made a part of the regular University course, it was possible to see that its students were qualified. They were required to spend some time in the academic department of the University, so that their previous education might be checked up, and then they were gradually admitted into the training-school for nurses. After that, of course, they are carefully instructed and advised by men and women experienced in this line of work.

It is to be hoped that the Kansas City meeting will have solved many of our nursing problems, and will clear the atmosphere for better nurses and more conscientious interest.

IS THE WORLD TO BE TOOTHLESS?

It has been asserted for some time that the ultimate race will be baldheaded, and now comes the startling suggestion, according to Dr. Nogué, a Belgian physician, that eventually the world is to be toothless.

He bases his statement upon the percentage of bad teeth found among the ancients and moderns. He even goes so far as to say that long before Christ the mummies which were discovered in various parts of the world, showed a definite disease of the teeth; that these old and ancient fellows had pyorrhea and abscessed teeth. It is quite easy to see how this might be recognized when one looks at the old skull and jaw bone of the mummified.

Then, too, it is very well known that there is a great difference among people in the care of their teeth. This is demonstrated by the number of mouths that are opened for inspection and the palpable evidences of decay and disease in the jaw and in the teeth.

It is very difficult to get a percentage that covers the ancient world, but it is comparatively easy to get one that is applicable to the modern. The only way that the ancients can present any evidences at all are the few who have been under observation long after death, but, evidently, sufficient change has taken place in the bones of the jaw, in the bony processes, and in the teeth themselves upon which a fair estimate may be made, though it is far below what was originally present.

Among the Anglo-Saxons the percentage of bad teeth ranged from 14 to 17 per cent, Gauls 21, Romans 27, Egyptians 40, Eskimos 3, East Indians 10, Australians 20, Kaffirs and Negroes 30, Chinese 40, Europeans 95.

But these percentages, indicating as they do that among the ancients a much higher percentage is likely, do not compare with the present or modern. Among the Hungarians, for instance, 75 per cent have bad teeth, Italians 92, Russians 80, Austrians 85, English 85, Norwegians 89, Germans 95, Danes 91, Americans 91, Swedes 93, Swiss 93.

Of course, it is yet too soon to tell what education, instruction, and dental clinics will do for the human race. No doubt, among all these modern races there must be some information disseminated that will make them take better care of their teeth and mouths, and yet when we look over the history of school children that have been under inspection and know the small percentage that use a tooth brush or other means of cleaning their teeth, there does not seem to be very much hope; and perhaps the Belgian physician who looks forward one hundred years sees people in flying machines, and, if he looks more closely, he will see them baldheaded and toothless. What a strange appearance they will make! Under such conditions the slower motive power will be relegated to past decades, and no amount of dentifrices or hair tonic will correct the inherent and evolutionary defects.

If Esculapius should come to this country and should he have advanced sufficiently in medical progress and medical literature, what a world of astonishment would he meet! He would perhaps scarcely be able to appreciate the rapid progress which the race has made, and he would doubtless call it rapid, because in his time things moved slowly. If he were to appear in New York or Minneapolis next month he would find such a wealth of rapid transit, rapid growth, and vapid ideas that he would want to go back to his long resting place, there to think the thoughts that he carried with him to the grave, rather than to associate himself with such a degenerating class of people.

This assertion of the Belgian doctor may not

be an idle one. It is quite likely as a race we lost our tails through the evolutionary process, thanks be to the Darwinian theory. Hence it would not be strange that other types of the individual should gradually and permanently develop into unsightly monstrosities. True, it would be easy to take liquid foods, or "gum" some semisolid food until our gums are ossified. It would simply hasten our desire to accomplish more things in a shorter time.

With insects, bacteria, and wolves of commerce constantly at our heels, we are certainly up against a very stiff problem, and whether we shall work it out depends upon the evolution of present events.

SPECIAL FEATURES OF THE PROGRAM OF THE NORTH DAKOTA STATE MEDICAL ASSOCIATION

There are several features of the program of the next annual meeting (May 26th and 27th) of the North Dakota State Medical Association which are exceedingly interesting and worthy of consideration by all who are engaged in the direction of medical society meetings, or, in other words, in the medical educational work that is the essential feature of all such meetings. Let us glance at these features::

1. The program consists of eighteen papers and an afternoon clinic for the examination and discussion of ambulant cases. The subjects of all the papers are exceedingly practical, not one of them being without interest to the general practitioner.

2. Of the eighteen papers, thirteen are to be read by men outside of North Dakota, as against five papers by men inside the state. As an entire afternoon is also given to clinics conducted by outside men, it is evident that the North Dakota men have given well-nigh their whole house to their guests.

3. The discussions are all opened by North Dakota men, thus putting upon them the task of the extemporaneous handling of the subjects treated in set papers, and the man who acquits himself creditably under such conditions is, indeed, a good man, and he contributes much to the value of the paper discussed.

4. As the Twin City men on the program are, in a sense, competitors of the Fargo men who made up the program, the cordial relations existing between the North Dakota and the Minnesota physicians, is apparent, and worthy of note.

BOOK NOTICES

PRACTICAL TUBERCULOSIS. A book for the general practitioner and those interested in tuberculosis. By Herbert F. Gammons, M. D., St. Louis, Mo. C. V. Mosby Company, 1921. Price, $2.00.

This book is supposedly for the general practitioner and for those interested in tuberculosis. It is purposely brief and rather fragmentary; for instance, the diagnosis of tuberculosis is disposed of in less than ten pages.

The book is illustrated by photographs, charts, and cuts of *x*-ray plates, the latter, as is not unusual, showing little of what is needed.

As a brief for laymen, the book is adequate, but it is doubtful if it would be of any considerable value to many physicians even though they might come under the classification of "general practitioner."

T. A. PEPPARD, M. D.

THE PRACTICE OF MEDICINE. By J. M. Anders, assisted by John H. Musser, Jr. Fourteenth edition, Sept., 1920. Philadelphia: W. B. Saunders Co.

This volume of 1,280 pages is most pleasing. In preface, contents, and text there are wealth and availability. Concise material, frequent credits to authors, and intimate knowledge appear on every page.

Diseases lately prevalent, as polio-influenza and encephalitis, appear in most recent clothing.

Classification, as in thyroid and kidney diseases, well represents the whole book.

Discussion of the infectious diseases covers control prophylaxis, hygiene, etc.

Original tabulation of differential diagnosis fixes attention favorably.

The wealth of helpful material is shown in tests for albumin.

The author cites Dieulafoy and approves, saying that the "dead finger" is one very early sign of chronic nephritis. The reviewer believes that "dead finger" is the effect of intoxication and appears sometimes too early for the above relation. The fleeting paralyses of nephritis are ascribed to hemorrhages; not to the tonic spasm of arterioles, as seen in "dead finger"; not to other disease of arterioles.

The materia medica is reassuring and is comprehensive. Very careful discrimination and application is made of remedies. In cases of long medication in valvular disease, the use of strychnia is not limited as some have urged. In supportive treatment we find "vascular," "arterial," and "cardiac stimulants," and again "stimulants" which in another instance reaches interpretation as "alcohol, strychnia, and ammonia." In the sepsis of diphtheria the first of these may be given in divided dosage to the amount of one ounce in twenty-four hours; in other sepsis (adults) in "guarded" dosage; in secondary fever and sepsis of smallpox, if need be, "unsparingly." After this, one may well read Koplik on "Alcohol in Pneumonia of Children."

Epinephrin in anaphylaxis might be supplemented by other tonics. In the neuralgic states the salicylates and quinine might be named. In the trend from ice-baths

one need not stop at the half-way place, for there are value, comfort, and conservation in the hot sponge.

The illustrations are new and very helpful.

The best evidence that one has read the book is in finding errors such as "injection" for ingestion, and the mistake once in dosage as given in bracketed equivalents.

It seems a work of supererogation for anyone to praise Anders Medicine. Many a man will feel security and strength as he refers to it. Its merits and worth cannot be adequately told. H. D. Haggard, M. D.

NEWS ITEMS

Dr. M. D. Kramer has moved from Roscoe, S. D., to Dupree, S. D.

Dr. Nap Chagnon has moved from Bricelyn (Minn.) to Detroit, Mich.

Waseca has voted to issue bonds for building a city hospital to cost $50,000.

Bemidji expects to have a $125,000 hospital, which will be built by the Lutherans.

Dr. L. J. Tiber, of St. Paul, was married last month to Miss Etta Golberg, also of St. Paul.

Dr. H. W. Arndt, of Frazee, was married in March to Miss Ethel Phillips, of the same place.

Dr. A. R. Schier, of St. Paul, was married last month to Mrs. Anna Iverson, of the same city.

Dr. J. W. Powell, of Sisseton, S. D., announces that he will build an addition to his hospital in that city.

Dr. E. Q. Ertel, of Ellendale, has been elected president of the new consolidated school board of that place.

Dr. P. K. Dahl has moved from Belfield, N. D., to Minneapolis, and is located at 2625 Chicago Ave.

Dr. Frank T. Cavanor, of Minneapolis, has gone East to do postgraduate work in Harvard and Columbia Universities.

Dr. E. O. Giere, of Watertown, S. D., has begun his new work in St. Paul, and has offices in the new Hamm Bulding.

Dr. J. H. Plant, of Killdeer, N. D., has become associated with Dr. F. E. Bunting, of Mandan, N. D., and has moved to Mandan.

Two Minnesota physicians have recently been arrested for selling prescriptions for liquor. A fine of $500 may follow conviction.

Dr. H. E. Peterson, of Granite Falls, has been appointed examining physician at that place for the Bureau of War Risk Insurance.

Dr. H. V. Hanson has joined the staff of the Union Clinic of Willmar. He will do the eye, ear, nose, and throat work of the Clinic.

Dr. L. E. Claydon, of Red Wing, has returned home, having made a trip around the world. He was accompanied by his daughter, Marjorie.

Surgeon C. F. Sanborn and Assistant Surgeon C. D. Osborne have been added to the staff of the U. S. Public Health Service Hospital at St. Paul.

Dr. J. Nelson Osburn, who recently joined the Nicollet Clinic of Minneapolis, was married last week to Mrs. Barbara S. Zane, of Sacramento, Calif.

The South Dakota State Medical Association will hold its annual meeting in Aberdeen on May 25th and 26th, the House of Delegates meeting on the 24th.

Dr. H. T. Kinney, of Pierre, S. D., who was the only medical man in the State Senate, saved the people of that State not a little harmful and some humiliating medical legislation.

Dr. James A. Johnson, of the Nicollet Clinic, Minneapolis, read a paper on "Hidden Malignancies" at the spring meeting of the Red River Valley Medical Society at Crookston.

Dr. Horace M. Brown, of Milwaukee, delivered a Mayo Foundation Lecture, April 8. His subject was: "The Anatomical Habitat of the Soul: Hammurabi to Harvey and Beyond."

Dr. P. A. Hilbert, of Melrose, who has served a brief term on the State Board of Control, will be appointed for a long term, the Legislature having increased the number of members on the Board.

The Men's Brotherhood of the Church of Peace is building a convalescent hospital at Rochester. The foundation was put in last fall. The superstructure will be completed this summer.

Dr. C. D. Whipple, of Minneapolis, who was convicted of selling morphine and sentenced to serve one year in the penitentiary, must serve his term, having failed in his appeal to the U. S. Supreme Court.

Dr. J. A. Myers, instructor in medicine in the University of Minnesota, has been given a fellowship by the Hennepin County Tuberculosis Association and will do research work in tuberculosis at the University.

The Minnesota Academy of Ophthalmology and Oto-Laryngology has arranged to entertain,

in June, Colonel Smith, of the English Army, who made a world-wide reputation for his cataract operation, which bears his name.

The adoption by the Iowa Legislature of the model bill for the registration of births and deaths leaves but four states without this bill. South Dakota remains one of the four by the death of the bill in a House committee.

A good friend sent us a news item for our last issue concerning the location of Dr. F. C. Titzell at Jamestown, N. D., but the penmanship of our friend was not equal to the occasion, and we mistook the "T" for an "F," and spoke of Dr. "Fitzell."

C. E. McNaught, an osteopath practicing in St. James, was arrested on a warrant sworn out by Dr. W. H. Rowe on March 21st for practicing medicine without a license. The following day he pleaded guilty to the charge and was fined $50 and costs.

Dr. J. W. Gamble, who has been associated with Dr. J. E. Crewe at Rochester for the past two years, has accepted a position as district supervisor with the U. S. Public Health Service. He will move to Minneapolis at once to direct the work of this district.

Reduced railroad rates will be given for the Boston meeting of the A. M. A., but to get the reduced rate, identification certificates must be obtained, and they can be had through Dr. A. R. Craig, Secretary of the Association, 535 North Dearborn St., Chicago.

The mid-summer meeting of the Southern Minnesota Medical Association will be held at Winona on June 27th and 28th. Dr. Aaron F. Schmitt, of Mankato, remains the managing director of the Association and makes the wheels go 'round—indeed, he makes them go faster and farther at every meeting.

"Short Courses for General Practitioners" open at the medical school of the University of Minnesota tomorrow and continue to the 28th. There are five courses, as follows: (1) Pediatrics, (2) Obstetrics and Gynecology, (3) Medicine, (4) Surgery, and (5) Combine Course. One may take a term of one week in any of the courses.

A $25,000 malpractice suit, brought against Dr. A. C. Jacobs, of Elmore, was dismissed by the judge when the evidence of the prosecution had been heard. The large number of malpractice suits meeting this same fate is evidence of the injustice done to medical men, as well as of the blameworthy course of lawyers who take such cases for prosecution.

PROGRAM OF THE ANNUAL MEETING OF THE NORTH DAKOTA STATE MEDICAL ASSOCIATION AT FARGO, N. D.

Thursday, May 26th, 9 a. m.

1. The Family Physician; His Place in Modern Medicine. Address of the President, Dr. Fred Ewing, Kenmare, N. D.
2. Gall-bladder Surgery. Dr. Edward S. Judd, Rochester, Minn.
   Discussion, Dr. Nels Tronnes, Fargo, N. D.
3. Digitalis; Its Use and Abuse. Dr. S. Marx White, Minneapolis, Minn.
   Discussion, Dr. F. I. Darrow, Fargo, N. D.
4. Late Results in Stomach Surgery. Dr. Arnold Schwyzer, St. Paul, Minn.
   Discussion, Dr. N. O. Ramstad, Bismarck, N. D.
5. Cerebrospinal Syphilis. Dr. E. M. Hammes, St. Paul, Minn.
   Discussion, Dr. W. C. Nichols, Fargo, N. D.
6. Surgery in the Abdomen in Infants from the Pediatric Standpoint. Dr. F. C. Rodda, Minneapolis, Minn.
   Discussion, Dr. R. D. Campbell, Grand Forks, N. D.

Thursday, 1 p. m.

7. Focal Infection. Dr. F. A. Bricker, Rochester, Minn.
   Discussion, Dr. H. W. F. Law, Grand Forks, N. D.
8. Cancer Problems from the Surgical Standpoint. Dr. E. P. Quain, Bismarck, N. D.
   Discussion, Dr. M. MacGregor, Fargo, N. D.
9. Psychology in Its Relation to Modern Medicine. Dr. H. J. Humpstone, Grand Forks, N. D.
10. Stricture of the Ureters. Dr. H. G. Woutat, Grand Forks, N. D.
    Discussion, Dr. J. W. Bowen, Dickinson, N. D.
11. The Surgical Reflex Stomach. Dr. Arthur T. Mann, Minneapolis, Minn.
    Discussion, Dr. R. E. Weible, Fargo, N. D.
12. The Treatment of Ptosis. Dr. W. A. Dennis, St. Paul, Minn.
13. Ptosis and Its Surgical Treatment. Dr. R. C. Coffey, Portland, Ore.
14. Deformities of the Foot Caused by Anterior Poliomyelitis, and the Usual Methods of Mechanical Treatment. Dr. Carl Chatterton, St. Paul Minn.
    Illustrated by motion pictures.
    Discussion by Dr. C. N. Callander, Fargo, N. D.

Friday, May 27th, 9 a. m.

15. Malignant Diseases of the Rectum and Sigmoid, with a Plea for an Early Diagnosis. Dr. Geo. A. Carpenter, Fargo, N. D.
    Discussion by Dr. W. A. Gerrish, Jamestown, N. D.
16. Hints for Diagnosis and Management of Gastric

and Duodenal Ulcers. Dr. Robert Rizer, Minneapolis, Minn.
Discussion, Dr. Bodenstab, Bismarck, N. D.

FRIDAY, MAY 27TH, 9 A. M.

17. Radium vs. Surgery in Gynecology. Dr. H. B. Sweetser, Minneapolis, Minn.
Discussion, Dr. E. P. Quain, Bismarck, N. D.
18. Mitral Stenosis. Dr. E. L. Twohy, Duluth, Minn.
Discussion, Dr. S. Marx White, Minneapolis, Minn.

FRIDAY, 2 P. M.
Clinical Program

Ambulant cases will be brought before the meeting for examination and discussion by our guests.

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Wanted, assistantship to, or partnership with, a busy city physician or surgeon. Desire a permanent proposition with facilities for real scientific work. Graduate Class A University; in general practice eight years; married; good health; and can stand a lot of work. Address 122, care of this office.

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A recent graduate of Northwestern with a year and a half interneship, including six months in the Chicago Lying-In Hospital and some general practice, wants to practice in a good village with hospital facilities, independently or associated with a surgeon. Licensed in Illinois and Minnesota. Aged 29 and unmarried. Best of references. Address 125, care of this office.

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The Victor *X*-Ray Corporation tells our readers, on another page, how to get service on Coolidge Tubes and also to save money at the same time. The corporation knows such service is profitable to both the seller and the purchaser; and our readers can obtain it through F. L. & H. E. Pengelly, at 220 La Salle Building, Minneapolis.

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In the Company's announcement on another page will be found a description of a very small and excellent ophthalmoscope, the use of which makes the eye tell its complete diagnostic story, and this instrument should be in the case of every general practitioner.

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The conditions under which our old-time physicians worked developed some wonderful diagnosticians, but those conditions have passed, and there are now helps for diagnosis within the reach of every physician that make the work of the physician of today much more accurate than that of the physician of yesterday.

The *x*-ray is one of the most important helps in modern diagnosis, and it does wonders in the hands of an expert, such as the director, Mr. A. J. Errett, of the laboratory named above, whose services are offered all medical men within reach of the laboratory, which is in the Besse (formerly the Pillsbury) Building.

RADIUM SERVICE

The Hillcrest Surgical Hospital, of Minneapolis, has steadily maintained a reputation for conservatism in surgical operations, and when it decided to make the very large outlay of money to buy sufficient radium to do successful work, the management had in mind the avoidance of surgical operations when radium would serve the patient better than an operation.

This marked conservatism still controls the work of the Hospital in the use of radium, for conservatism is here needed, as well as in surgery. Radium will not cure all pathological conditions, but in its conservative use we see a great forward step in medicine.

The Radium Service at Hillcrest is of the highest character, and the most conservative physician need not fear that radium will be used upon any patient except when the most conservative judgment justifies such use.

HAY FEVER PROPHYLAXIS

The Lederle Antitoxin Laboratories, of New York City, claim that clinical reports covering a period of six years show that their Pollen Antigen has given relief in 82 per cent of the large number of cases covered in such reports. As there is no reason to question the accuracy of such reports, especially as the efficacy of hay fever prophylaxis is no longer questioned, our physicians should give all their victims of this distressing malady an opportunity to ward it off.

It should not be forgotten that prophylactic measures in this case should be adopted very soon, and before the pollen season is upon us. The Lederle Antitoxin Laboratories, 511 Fifth Avenue, New York City, will gladly send literature upon request. They may also be addressed, 633 Andrus Building, Minneapolis, or 265 Portage Avenue, Winnipeg.

LOESER'S INTRAVENOUS SOLUTIONS

The advantages of intravenous medication are so great that one wonders why such form of medication is not universal, at least in the administration of some drugs, which can hardly be administered otherwise and which, given intravenously, produce almost marvelous results.

Intravenous medication is neither a fad nor an experiment. It may be somewhat new, but it is so thoroughly scientific that we wonder how a drug can be administered in any other way.

The list of pathological conditions or specific diseases that yield readily to the administration of well-known remedies thus introduced, in proper solution, directly into the blood-stream, is very large; and every physician should be familiar with it and also with the progress intravenous medication is making.

All this information can be obtained from the New York Intravenous Laboratory, 112 West Twenty-first Street, New York City.

EFFECT OF PROSTATE FEEDING ON THE GROWTH AND DEVELOPMENT OF TADPOLES

Thyroid feeding stimulated metamorphosis and retarded growth.

Thymus retarded metamorphosis and stimulated growth. Confirmed and extended by Rogoff.

Effects of prostate feeding manifested itself in changes both in growth and differentiation of the larvæ. As in the case of thyroid it was found that feeding with prostate tended to hasten the differentiation of metamorphosis of the tadpoles into frogs. Noticeable in some cases even after four days. The effect was not so rapid, but it could be fed continuously while thyroid required intermittent feeding. Prostate did not cause shrinkage of size but showed a tendency to stimulate growth above normal.

It was found that prostate feeding tends to stimulate both growth and metamorphosis of the larvæ of frogs. The observations speak in favor of an internal secretion of the prostate gland. (David I. Macht), *J. of Urol.*, April, 1920. James Buchanan, Urol. ins. and phar., Johns Hopkins University.

A SCIENTIFIC ACCOMPLISHMENT

Remarkable advances have been made in the study of blood-clotting and hemorrhage during recent years. Not only have we learned much of a practical nature concerning the "mechanism" of blood coagulation, but we have also discovered means to control even inaccessible bleeding when, as is often the case, it fails to cease spontaneously, due to defective coagulability of the blood.

The blood is kept in a fluid state in the vessels by the presence therein of antithrombin. Should the proportion of antithrombin be unduly increased and a hemorrhage occur, the blood would fail to clot. The absence or insufficiency of prothrombin or kinase, which perform an important part in the process of coagulation, would have a similar effect. Hence in the treatment of uncontrollable hemorrhage the physician needs an agent that can be depended upon to meet both of these conditions. Such a substance is Hemostatic Serum, P. D. & Co., a comparatively recent addition to the list of highly scientific remedies that have been elaborated by experts in physiologic chemistry. Hemostatic Serum neutralizes antithrombin and supplies prothrombin and kinase. Its effect is truly remarkable in the treatment of capillary hemorrhage, hemorrhage of the new-born, pulmonary hemorrhage, persistent epistaxis, bleeding from gastric and intestinal ulcers, hemorrhage following surgical operations upon the tonsils, the bones or the viscera, and so on. It is administered hypodermically or intravenously in doses of 2 to 5 c.c., and the dose may be repeated at intervals of two to six hours. It is also used to prevent hemorrhage by administration prior to surgical procedure in hemophiliacs. To be prepared for any emergency the surgeon should include a package of Hemostatic Serum in his equipment, as the product keeps well and is always ready for immediate use.

THE OCONOMOWOC HEALTH RESORT

Comparatively few people realize that the best time of year for the care and treatment of nervous and mild mental cases is the spring, summer, and autumn months, that is, the time when they can be outdoors most. Such patients may do fairly well at home, but at a high-grade health resort they have their best chance for complete recovery.

The Oconomowoc Health Resort is a place where natural conditions are at their best, and where medical treatment and direction are unexcelled, producing conditions highly favorable to the patient.

Dr. Arthur W. Rogers, the physician in charge, is an expert in his line of work, and the institution and the grounds are designed to put the patient on the road to recovery in the shortest possible time. Dr. Rogers cordially solicits correspondence from any physician who seeks information in this line.

ALKOLOL

Perhaps the most significant feature of present-day therapeutics is the endeavor to provide medicinal agents in the form which most nearly approaches the natural, or, as it might be termed, physiological. Crude salts are being used less and less, and the efforts of the laboratory seem to be expended at present along lines which seek to copy nature's methods.

We have modified very materially our ideas concerning what constitutes the most efficient form or means of assuring effective antisepsis. We realize more and more as the days go by the truth of the axiom that the best antiseptic solution for any mucous membrane is the normal and natural secretion that that membrane is composed of in part, and we can understand very clearly that any preparation which serves the useful purpose of restoring to an irritated or inflamed mucous membrane its normal secretion must bring satisfactory results.

This is the principal reason why Alkolol is steadily gaining in use and in popularity. While it is not perhaps antiseptic in the ordinary meaning of the word, it does supply depleted and exhausted mucous membrane cells with the physiological salts that are absolutely necessary to enable them to regain their normal secretory power. Instead of producing physiological irritation, which results in hypersecretion, Alkolol restores vascular tone, helps to overcome congestion, and does not overstimulate secretory activity.

Hence, it is not only soothing and healing, but it builds up flabby or relaxed mucous membrane tissue and avoids aggravating or producing hypersecretion, which often amounts to catarrh, and thus defies the very object for which the so-called antiseptic solution was employed.

To know Alkolol is to use Alkolol. To become acquainted with Alkolol is very easy because all that is necessary is to send a request for interesting literature and sample for trial to the Alkolol Company, Taunton, Mass.

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is recognized by Medical Men of today as indispensable to aid diagnosis and treatment of disease.

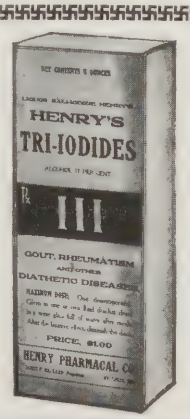
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Mr. Kimball is primarily a medical book man. He seeks to know the expert opinions of medical men on all new and standard books, and to carry that information to his customers; and he also endeavors to serve his customers in other ways. In his present card, to be found on another page, he offers some apparatus and furniture at largely reduced prices.

Mr. Kimball's offerings are always to be depended upon.

DISCOVERY OF A NEW ANESTHETIC—BUTYN

Discovery of a new local anesthetic to be used as a substitute for cocaine, in anesthesia, was recently announced by the University of Illinois, in whose laboratories the work was accomplished.

A further announcement to the medical profession is now made by the Abbott Laboratories, of Chicago, that this new anesthetic will be supplied by them and will be known as "Butyn."

This new product is structurally related to both cocaine and Procaine, but clinical tests have shown it to be superior to cocaine in practically every respect: for example, it is more effective and less toxic; its solutions may be boiled without decomposition; it causes no dilation of the pupil of the eye, nor drying up of its secretions. It is less irritant than cocaine and much more rapid in its action. The anesthesia produced by Butyn is of longer duration, and its solutions are slightly antiseptic.

No Harrison narcotic blank is required in securing Butyn, as it is without the habit-forming disadvantages of cocaine.

Clinical work done by Dr. Geo. F. Suker and Dr. H. S. Gradle, of Chicago, proves this new anesthetic useful as a substitute for cocaine. A 2 per cent aqueous solution instilled into the eye will produce anesthesia so rapidly that operative work can commence at once, whereas from four to five minutes was formerly required where cocaine was used.

It is expected that this new discovery will soon be available for the profession. Further information may be obtained by writing to Research Department of the Abbott Laboratories, which have collaborated with the University of Illinois in developing this new anesthetic.

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Exercise, if not carried to excess, aids development. If the immunizing mechanism is below par, it should be developed. This can be accomplished by the injection of dead bacteria, which cannot resist the phagocytes, but which stimulate the immunizing mechanism, for their destruction exercises it, if you will.

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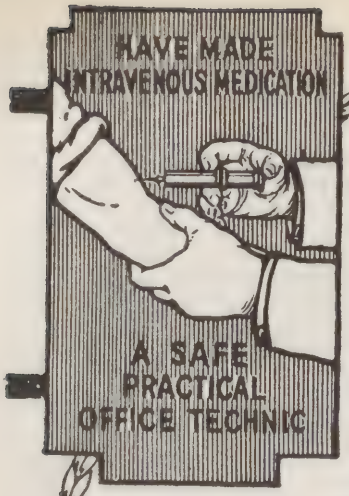
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The Official Journal of the
North Dakota and South Dakota State Medical Associations

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INTUSSUSCEPTION IN CHILDREN*

BY A. W. ABBOTT, M. D.
MINNEAPOLIS

Intussusception in the young child and in the adult should be studied separately, because in the child the location of the invagination, its etiology, and its resultant symptoms differ in very many respects from these in the adult.—for instance, in the child the intussusception is ileocecal in 90 per cent or more; in the adult it occurs in this location in only about 25 per cent.

In the child no satisfactory explanation of the cause has been demonstrated, while in the adult the presence of a new growth or inflammatory swelling or tuberculosis in a restricted portion of the bowel or severe traumatism, etc., in the majority of cases point very clearly to the initiating cause.

In the child the onset is abrupt with marked periodicity in the pains, while in the adult there is a more gradual attack and the subsequent pain is more continuous. In the child there is no warning. In the adult some evidences of preceding intestinal disease is to be obtained in the majority of cases.

In the child hernia is about the only thing that in any degree parallels the symptoms of invagination, while in the adult perforations, acute inflammations, and mechanical obstructions of all sorts confuse the diagnosis.

For these reasons, I have asked our President to divide the subject, as above.

To show the marked improvement in the diagnosis and treatment of intussusception in the last fifty years, we need only to recall that Charles West, the most noted student of children's diseases of his time, found only four cases out of over 40,000 sick children, and that Sir T. Holmes, of the same period, an equally eminent surgeon, announced that the "combined wisdom of the greatest surgeons declares that the abdomen should never be invaded for this disease." Compare this with the fact that more than 30 cases have been positively diagnosed and operated upon in this city alone in the last eight years with a mortality of less than 12 per cent in the cases not beginning in collapse.

Notwithstanding all this to our credit, it cannot be doubted that too many babies have died, supposedly of dysentery or enterocolitis, who might have been saved by an early diagnosis and good surgery.

Seventy-five per cent of these cases occur in children under one year of age. In nearly 100 per cent the invagination is ileocecal, and 100 per cent begin with a sudden violent pain, apparently abdominal. In 20 per cent this pain is followed by collapse, and nearly 100 per cent of these have died whether operated on or not.

Regularly recurring pains follow the initial paroxysm in 100 per cent.

A tumor can be felt in 90 per cent after three hours. It can be felt oftenest in the left abdomen, occasionally in the region of the transverse colon, seldom in the ileocecal.

The shadow of the thick oblong mass has been seen with the fluoroscope in all of the cases we have so examined.

*Presented before the Hennepin County Medical Society April 4, 1921.

The barium meal or enema is confusing rather than helpful and entirely unnecessary.

The above are the early and important symptoms which should lead to a positive diagnosis and immediate operation.

Of the later symptoms, vomiting is absent until after twenty-four hours in 81 per cent, if we exclude the emptying of the stomach at the onset. Seventy-seven per cent have no bloody stools, or not until after two days. Mucous stools, perhaps tinged with blood, are generally first noticed when first seen by the family physician and before the blood appears. It is an earlier symptom than bloody stool.

The intussusception can be felt per rectum in only a little more than one-half of the cases.

Feces are not passed after the one or two evacuations immediately following the attack.

In children so young it is usually impossible to say whether or not one finds a localized tenderness. Occasionally one may be certain that it does not exist. In four of our cases this absence of tenderness could be definitely established. In all cases there is apparently no more tenderness over the tumor than in other parts of the abdomen. Any one who is familiar with the examination of little children perfectly understands how little one can depend on this sign.

Studying these symptoms more in conformity with the progress of the disease, we find that these little children, apparently in perfect health, are suddenly stricken with a violent abdominal pain and a regurgitation of the stomach contents. At this point we have to consider two courses the disease may take. In one, the little one recovers its cheerfulness in a few moments, and very likely begins to act as usual, and, perhaps, if old enough, resumes its play. In a little while it again cries, and this alternating relief and pain recur again and again. In the second form the child with its first pain goes into a collapse, its pale, pinched face, and rapid pulse indicating profound shock a feeble moan now and then timing the pains.

These recurring pains, with periods of relief, the writer regards as the most conspicuous and unmistakable of symptoms. The outcries accompanying the pains are peculiar, and vary from a little cry or grunt to a subdued moan. I have never heard one of these little ones scream. Especially noticeable are their accompanying grotesque gestures and postures; such as limping about with the hands on the abdomen, or boring into the pillow with the head, the child taking the knee-chest position. The child may roll, face down, on the floor or throw itself across its mother's knee. The sudden relief between the pains is equally striking. The pains last from one-half to three minutes, rarely more than two, with a longer interval of relief. So characteristic and impressive are these recurring pains that a mother who has had a previous case in her family and observing these same pains in another child, will generally, in calling the doctor, inform him that he will have to arrange for an operation upon another case of intussusception. These pains are almost as regular in periodicity as labor pains, and unlike those of common bellyache or colitis. They are not continuous with exacerbations as in appendicitis. They naturally resemble the pains of other mechanical intestinal obstructions, but all other mechanical obstructions are exceedingly rare in children under five years of age, hernia excepted.

In the second form, that of collapse, the child is often too weak to manifest signs of pain beyond occasional moaning. This symptom, sudden collapse, with indication of periodic pain, in a child previously normal, should strongly suggest the probability of an invagination of the intestine.

Next, in frequency, but not in importance, are mucous stools, amounting to 100 per cent in the ten cases in which we have a record. The mucus is often streaked with blood, and would be of the utmost diagnostic importance were it not for the fact that it is almost equally as often seen in dysentery. It is not one of the earlier symptoms, but earlier than the bloody stools. It is rarely noticed before the second day, and often not until the third.

The next most common symptom is the presence of tumor. The presence of a tumor should not be negatived except after the most careful and gentle palpation, made during the interval between the pains. The time when a tumor is first noticeable can, of course, be seldom determined, as the child is not examined for this sign until seen by the physician, and then often not until the symptoms are urgent. In one case, the child of a physician, the tumor was made out in three hours after the initial pain. Before the swelling of the intussusceptum takes place there can be no discoverable tumor. When the swelling takes place there must, of course, be a tumor, but it may be so soft and so situated that it cannot be demonstrated. Considerable swelling of the intussusceptum undoubtedly occurs within three hours in most cases. If we could always identify this mass, we should have, in it, a very early and important symptom. Here the fluoroscope is indispensable, because the shadow is always, in our experience, to be seen.

The next most common symptom, 83 per cent in our cases, is the absence of fecal movements. The babe may have one or two movements immediately following the attack, but after that the bowel is empty below the intussusceptum.

A flaccid abdomen, generally scaphoid, was noted in 80 per cent of our cases. It is noted early and may continue for days. Distention comes too late to be of diagnostic importance.

Rejection of the stomach contents accompanied the onset in 100 per cent of these cases, but vomiting was not resumed until after the second day in 81 per cent. In one case there was no vomiting; two did not vomit until the fourth day; and one not until the fifth; one vomited continuously from the beginning. We cannot, therefore, regard vomiting as an early or constant or reliable symptom.

Blood in the stools is absent for the first two days in 72 per cent. When present, this is, of course, a most convincing symptom, but, contrary to the general impression, is not an early one, and its absence should not invalidate the diagnosis.

When the intussusceptum can be positively identified by rectal touch, it is absolutely pathognomonic, but it could be reached by the finger in only 55 per cent of our cases. The absence of this sign should by no means exclude intestinal invagination.

Reviewing these symptoms as to the period of appearance and importance, we find:

1. That a sudden violent abdominal pain, accompanied by a regurgitation of its stomach contents, in a child otherwise well, initiates the attack in 100 per cent of the cases.

2. That recurring pains, varying in intensity, but quite regular in periodicity, accompanied by the assumption of peculiar postures, generally prone, in those strong enough to move about, occur in 100 per cent; that in those cases beginning in collapse (20 per cent) these periodic pains are often indicated only by regularly repeated moans and drawing up of the limbs.

3. That an abdominal tumor can be made out somewhere in the course of the colon in 92 per cent.

4. That the fluoroscope gives us a picture within twelve hours that is not duplicated by any other known condition in the infant.

5. That the stools do not contain feces in 91 per cent.

6. That mucous stools are recorded in 83 per cent.

7. That the above indications, without further question, should establish a positive diagnosis of intussusception within twenty-four hours after the attack.

8. Leichtenstern fifty years ago advised "before thinking of any other form of intestinal obstruction in the child, exclude intussusception." I would go a step farther and say, given the above symptoms, recognize intussusception without waiting for signs of obstruction.

9. That blood in the stools adds to this certainty of diagnosis, but it may be absent in 77 per cent until after the second day.

10. That, instead of distention, we may expect a flaccid, scaphoid abdomen. If one waits for distention, he waits for fatal peritonitis.

11. That recurring vomiting is not usually one of the earliest symptoms, being absent in 81 per cent until the second day or later, and that in exceptional cases there is no vomiting.

12. That the positive identification of the intussusceptum by the finger in the rectum is absolutely pathognomonic, but may be demonstrable in only 55 per cent. It is a late symptom.

13. That the virulence of the disease depends not so much upon the time elapsed before operation, as upon the intensity of the strangulation of the mesenteric circulation; and yet we must bear in mind that this strangulation generally comes on rapidly.

14. That, to protect all cases, the earliest possible diagnosis and operation are imperative.

A few suggestions as to treatment:

In the future my experience would lead me, in the cases beginning in collapse, to wait for an hour or two before operating, to see if heat and appropriate doses of morphine, hypodermically, will not restore vitality.

In operating:

Gas or local anesthesia is to be preferred to ether.

Make a liberal incision over the right semilunar line no matter where you feel the tumor.

Push out the intussusceptum from below, instead of pulling on the upper bowel.

Let the appendix alone, unless unquestionably necrotic or acutely inflamed.

Wait until you are sure that the bowel will not regain its circulation before resorting to excision, and then wait a little longer. If reduction is not difficult the return of the circulation is almost certain.

In case the intussusceptum is too adherent for reduction, remove the intussusceptum by the Barker method; that is, incise intussuscipiens after stitching around the neck, clamp off and remove the invaginated portion, suture the two layers of the stump, and, finally, close the incision in the intussuscipiens.

Do not think that the swelling in the region of the ileocecal valve, after reduction of the invagination, is a tumor, and kill the child, while learning that you have made a mistake.

BLIND INTERNAL FISTULA*

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That there may be no confusion as to the type of lesion referred to in this paper, I will specify that the condition in question is an abscess and its resulting sinus, the tract extending upward between the mucous and muscular coats of the rectum. Attention is called to this condition because, there being no external evidence of an abscess, the patient is frequently dismissed with some "pile" salve, no internal examination having been made.

The causative factors assigned to these and other rectal abscesses seem to be limited only by the imagination of the various authors, and, while in a few cases they are caused by swallowed fish bones, sitting on the cold ground, kicks, etc., I believe that the vast majority are the result of one condition, namely, a chronic infection of the crypts of Morgagni. In a great many persons, especially in those who are troubled with internal hemorrhoids, relaxed mucous membrane, and hypertrophied papillæ, these crypts will show a decided pocket or pouch at their lower end and therefore act as admirable cess-pools for secretions and small particles of fecal material. This irritation, coupled with lack of proper drainage, offers a fruitful field for a chronic infection. After a period of time the infection burrows through the mucous membrane to the underlying tissues, and an abscess results. Frequently, no doubt, the abscess is precipitated by some additional trauma or strain as a constipated stool or an attack of diarrhea. Once this infection is through the mucous membrane it finds itself in a comparatively free space filled with a little areolar tissue, which is admirable for its spread, and an abscess soon results. If left to its own devices spontaneous rupture of the abscess will usually occur at one of two sites; first through the weakened mucous membranes at the bottom of the crypt where the infection entered, or failing at this point will burrow downward along the side of the anal canal to a point between the two sphincters, where there is always a weak point in the anal wall.

The symptoms vary with the exact location of the lesion. In the acute stage, if the abscess is located well above the anal canal, the local symptoms are not extremely severe. There are the usual signs of confined pus, malaise, accelerated pulse, increased temperature, and generalized aches and pains, or greater or less severity. Locally there is a dull ache or a feeling of weight in the rectum with perhaps some pain radiating through the bladder and down the legs. These symptoms are more severe when the patient is standing, therefore he usually remains in his bed or at least lying down. In a recumbent position he is quite comfortable, so he frequently thinks he is merely having an "attack of piles." In case the abscess burrows downward along the anal canal and sphincter muscles the pain is very much more severe and is of a cutting, throbbing character. This difference in pain is due to the fact that the sphincter and anal area are rich in sensory fibers, while the rectum itself has a very poor sensory supply. In these low-lying abscesses the pain is so severe that the patient usually sees a physician at once, whereas with the higher type he frequently waits, and the abscess evacuates spontaneously.

The diagnosis of the condition is extremely simple if a thorough digital examination is made, but only too frequently this is not done. The external parts appear normal, and the patient is dismissed with a salve or suppository. Upon introducing the finger an indurated or fluctuating mass can at once be felt along the side of the bowel. If the mass is high the introduction of the examining finger and pressure cause comparatively little pain, but, if the abscess is located lower down, the introduction of the finger is extremely painful.

*Presented before the Hennepin County Medical Society April 4, 1921.

In cases where spontaneous rupture has already occurred there is usually a history of sudden relief of pain with the evacuation of a considerable amount of pus, either alone or with a bowel movement, although occasionally the presence of pus is not noted by the patient. If a period of time has elapsed between the date of rupture and the time the physician is consulted the most common symptom which the patient notices is a discharge either with the bowel movement or between evacuations. In the latter case there are usually redness and irritation around the anal orfice. Digital examination at this time will show a moderate tenderness and a definite induration over the tract of the sinus, although not so extensive as can be felt in the acute stage. With a speculum and a probe the opening of the sinus can be searched out in almost every case. With a diagnosis so simple it would seem that few would be overlooked, but, due to incomplete examination and the fact that these cases produce a variety of reflex disturbances, which are often treated as a primary condition, the rectal lesion is not discovered. For this reason I wish to report four typical cases of this malady.

Case 1. Mr. R. J., age 29; accountant; unmarried; always enjoyed good health and no serious illness. One year ago noticed a tenderness in the anal region, which soon cleared up following the use of suppositories, and he had no further trouble until the present time.

Present illness: Seven days ago he noticed a soreness and tenderness around the anal region. This has been gradually growing worse and is accompanied by severe throbbing pain. The pain is much worse when the bowels move. Various salves and applications have given no relief. Temperature, 100°; pulse, 99. P. E. Inspection, negative. Introduction of the finger causes severe pain. Posteriorly, just above the sphincter could be felt an indurated mass the size of a man's thumb, which was extremely tender. A bivalve speculum was inserted, and upon opening the blades pus was seen to spurt from a small opening between the sphincters on the posterior aspect of the anal canal. Apparently the extra tension caused by the instrument caused the abscess to rupture. The pain was relieved immediately, and the patient felt so well that, despite our advice, he refused operation, but twenty-four hours later he was back with the same pain and ready for operation. Under gas the tract was laid open and packed. Recovery was complete and without complications. This case illustrates the lower type of abscess.

The next case is one of the most interesting because of the symptoms caused by this condition.

Case 2. Mr. C. E. E., age 51, a lumberman. General history, unimportant. Has had "piles" for ten or fifteen years with a number of acute attacks of pain. Usually has a feeling of heaviness in the rectum with a dull headache. Frequently indefinite pains radiating down the thighs. During the past five years he has had three severe attacks of lumbago and sciatica, necessitating his staying in bed from two to three weeks. The last attack is typical of the others. About a month ago he began to notice that he was having unusual discomfort in the region of the rectum, although nothing could be seen externally. As usual, he consulted his physician, who told him, as on previous occasions, that there was nothing to be made out, gave him some salve, and told him to use some hot applications. He did this for a few days, by which time he was confined to his bed with intense pain and his back so stiff and tender that he could not get up. An internist was then called, who upon examination said there was nothing in the rectum to account for his condition. He made a diagnosis of lumbago, and proceeded to treat him, giving him, among other things, two hypodermics of morphine daily to quiet the pain. After two weeks in bed he began to feel a little better and at the end of the third week returned to his office although he said he had severe dragging pain in his rectum if he was on his feet for more than a few minutes at a time. At this time he was referred to my office. P. E. His general appearance showed that he had recently had a severe illness. He was still thin, pale, and nervous. External inspection revealed nothing. Instrumentation showed four internal hemorrhoids of second degree. Upon digital examination a hard mass the size of an almond located in the ischiorectal fossa adjacent to the anal canal could be palpated. When rolled between the index-finger and the thumb it was rather smooth in outline and about the consistency of a fibroid. There was practically no tenderness. The mass was removed under local anesthesia and was found to consist of a thick wall of scar tissue, in the center of which was a small cavity lined with granulation tissue. The sinus led to the anal canal. What undoubtedly occurred in this case was that the opening into the anal canal would close, and then the sinus would distend with pus, causing the symptoms related. The abscess having a thick fibrous tissue wall would rupture at the weakest point into the anal canal and temporary relief would be felt until the cycle repeated itself. This case demonstrated one thing if nothing else, and that is that every patient who has rectal symptoms is entitled to at least a reasonably thorough examination.

Case 3. This case demonstrates another type where there was nothing to attract attention at the onset. Miss R. N., age 24, cashier. In October, 1919, she contracted gonorrhea. This was treated by douches and local applications. About four weeks after the onset of the gonorrhea she noticed a discharge of yellow pus from the rectum at the time of the bowel movements. There were no subjective symptoms whatever, or at least they were unnoticed, due to her anxiety concerning the gonorrhea. She had had local applications for three weeks without relief.

P. E. External examination was negative. Internal examination was negative to inspection, but upon carefully examining around Hilton's line and probing the crypts an opening was found which led into a sinus, extending one and one-half inches up the side of the rectum underneath the mucous membrane. Upon milking the sinus a small amount of pus could be pressed out. I did not have the opportunity to operate on this patient.

The fourth case selected from this series re-

veals another history and group of symptoms due to the same pathological entity.

Case 4. Mr. T., a piano dealer, age 57, complained of hemorrhoids. First attack was about thirty years ago; has had occasional trouble since that time; he dates his present condition to one year ago. At that time he had severe pain in the rectum, which lasted for two days, during which time he was in bed. The pain left him rather suddenly although a dull ache and weight persisted for some time. Shortly after this time he began to have protusion of his hemorrhoids with every bowel movement, manual replacement being necessary. There was very rarely any bleeding, and then a small amount. He has had stiffness and soreness in his lumbar muscles and some pain radiating down both legs. No pain at the time of bowel movement. No tar-like stools. Has lost seven pounds in weight. During the past eight months he has noticed a stringy mucous discharge, which precedes the passage of fecal matter. He was told by an advertising specialist that he had piles, but that he did not know what the discharge came from, but that he would probably find out later as his treatments progressed.

P. E. Examination showed internal hemorrhoids of the third degree. The crypts between these hemorrhoids were inflamed and filled with mucopurulent material. On the right side just at the mucocutaneous border was a deep rent. Probing revealed a sinus extending above it into the rectum for about one and one-half inches, and overlying it was an indurated mass the size of the index-finger. This was very tender on pressure. The mucous membrane over it though reddened showed no ulceration. A diagnosis of an internal rectal abscess with a persisting pocket or sinus was made.

I think these four cases illustrate how frequently this condition is overlooked and also how easy to diagnosis is, if a reasonably careful examination is made. As in other pyogenic conditions around the rectum the best treatment is early and thorough incision followed by careful after-treatment until the wound is healed. The incision should be made inside of the bowel and on no account through the ischiorectal fossa, for this would convert a simple abscess into a complete fistula, necessitating division of the sphincter.

The chief thought I wish to develop in this paper is a plea for more careful examination of our patients who complain of pain, definite or indefinite, in the region of the rectum.

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RADIUM AND THE GENERAL PRACTITIONER*

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There is, perhaps, no therapeutic agent that has made greater progress in the medical field than radium. In both malignant and benign conditions, it has won a distinct place for itself. This fact is important to no one in greater degree than to the general practitioner. He not only meets with every type of pathological condition, but he must outline the treatment as well. His responsibility is by no means a small one. His knowledge, therefore, must be comprehensive, as well as varied. In this age of specialization the literature on new discoveries is so voluminous that, as a consequence, the general practitioner does not find sufficient time to familiarize himself with the entire field; consequently his interest must become centered on the practical, rather than on the theoretical, means.

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The general practitioner is sufficiently informed concerning the beneficial results of radium to know that it has a most promising field. Although radium therapy has not reached its zenith, it has proven extremely successful in spite of the numerous difficulties with which it has had to contend. No one can predict its ultimate possibilities. In the metamorphosis of radium therapy the radiologist has been confronted with numerous obstacles—difficulties that he has been gradually overcoming as he has been blazing his own trail. In the beginning, literature on the subject was not available. The question of dosage, for example, was a matter entirely of experimentation. Errors of screening frequently resulted in severe inflammatory reaction, thus producing fistulas or extensive sloughs. In the early history of radiology, the value of cross-firing was not sufficiently realized. (By cross-fir-

is meant the placing of the ray applicators in such positions as will direct the rays through a focal point. This focal point must be the pathological lesion.) Metastasis and adjacent glands were often inadequately treated and, at times, even neglected. *X*-ray therapy, a valuable adjunct in the treatment of malignant conditions, was, and still is, too frequently omitted. The total number of milligram or millicurie hours of radium employed in any one series of treatments should cover the shortest period of time possible, that is, of course, with due consideration for the reaction on the patient. Such a technic insures the most effective blow to the malignancy. (Broadly speaking, the number of milligram or millicurie hours is obtained by multiplying the number of milligrams or millicuries used, by the number of hours the radium is employed. *Milligram* is distinguished from *millicurie hours* in that the former indicates the use of the radium salt, while the latter refers to its emanation. The loss in activity of radium emanation is three-fourths of one per cent per hour, while that of the radium salt is practically negligible.) Not until recent years has the histological study of types of cancer cells revealed their various resistances to radiation, for example, the round-cell sarcoma is far less resistant to radiation than the fibrosarcoma. Even in the face of these, and of additional obstacles, radium has achieved a most eminent place.

It is impracticable, as well as impossible, for the general practitioner to keep informed on the progress of radium therapy. Its application has become so extensive that many men are devoting themselves exclusively to its study. As a result we have a wealth of material, both general and specific, from the results obtained in this field. The treatment of cancer is undoubtedly the most important phase to be considered in the application of radium therapy. No single division of the field is wealthier or more interesting in its literature than the subject of cancer. Unlike so many semispeculative opinions on metamorphosing questions, these seem quite uniform. It is true that much discrepancy may be found in the radium statistics; however, it is readily seen that this is caused largely by a failure to present comparisons on similar bases. Another point that likewise must be considered is the fact that many of these statistics are compiled by inexperienced operators, whose statistics, it is self-evident, cannot be as favorable as those statistics compiled by experienced radiologists. It is as essential for the radiologist to understand the malignancy as it is for the surgeon who is about to operate. Moreover, if we classify cancer anatomically, we find that epithelioma of the skin gives a much more favorable prognosis than does carcinoma of the mucous membrane, just as the prognosis in carcinoma of the uterus and cervix is more favorable than carcinoma of the rectum. In spite of these reverses, radium treatment of cancer in its entirety is most promising. As a palliative treatment of cancer, radium is incomparable. Any practitioner who has been confronted with, for example, an inoperable, bleeding, secondarily infected, pus-discharging, foul-smelling carcinoma of the cervix and vagina, can appreciate the palliation with always a possibility of a cure. During a week's time I saw in the Radium Department of the Mayo Clinic three such cases. Each history at entrance examination revealed inoperable carcinoma of the cervix. Radiotherapy was advised as a palliative means. In each case a series of treatments was applied, and in each case the last examination revealed a clinical cure. Consider the relief to the patient and to her family!

Although radiotherapy has won a unique place for itself in the palliation and cure of cancer, its usefulness does not cease here. Certain it is, that its beneficial results have become so great in the armamentarium of the leading surgeons of this and of foreign countries that all recognize its merits. Some advocate the treatment of cancer with radiotherapy only; others contend that such treatment should precede and follow surgery. Another decade or two will gradually improve the technic of radiotherapy to such an extent that we shall be in a better position to judge results.

In non-malignant pathological conditions, radium therapy has but recently come into its own. The reasons for this are numerous. When the destructive action of the radium ray on living tissue was discovered, the attention of the cancer research worker, as well as that of the surgeon, was directed along this line. The medical, as well as the public, cry for specificity in non-malignant pathological conditions, was not as urgent as was that in cancer. Thus this field was left untouched until the results of radium action upon malignancy were quite well under way. In the meantime the action of the Röntgen ray had been demonstrated as beneficial in numerous non-malignant pathological conditions. Owing to the accuracy of the dosage, to the convenience of application, and to the rapidity of the action, the use of the radium ray was, in due time, employed in similar cases.

At the present day practically every medical journal abounds in reports of the beneficial results of radium therapy in these benign conditions. In fact, it is conceded that, in a great number of these conditions, the treatment, par excellence, is that of radium.

No specific branch of non-malignant conditions has been more greatly benefited by radium treatment than has menorrhagia. This condition is frequently met with by every general practitioner. It may be present in menstruating patients of any age. However, it is met with most frequently in patients over the age of thirty-five. It is true that surgery offers measureless relief for this condition, and should be used, if possible, in women of child-bearing age. When menorrhagia is not amenable to surgery or to medicine, radium is specific. Radium, in proper dosage, can check the menorrhagia and still not cause a cessation of menstruation. In women past the child-bearing age who are suffering from metrorrhagia, radiotherapy is the ideal mode of treatment. The period of severe bleeding frequently attendant on the menopause can be relieved by radiotherapy. One treatment is usually found sufficient to effect a cure. Among the contraindications for the use of radium in menorrhagia are histories of pelvic infection and histories suggestive of malignancy. In cases of the latter kind, abdominal hysterectomies preceded by radiation, are advisable.

Radium is recommended as the therapy of choice in the treatment of angiomas. By accurate technic, angiomas can be alleviated to such an extent that the skin is left practically normal in appearance.

The aid of basal metabolism in thyroid pathology has established a very nearly perfect means in estimating the toxicity of goiters. The metabolic rate also furnishes very important data as regards type of goiter encountered. In short, the study of basal metabolism has become a recognized necessity as a guide. When the thyroid gland was first recognized, medical treatment was the therapy employed. Later, surgery was heralded as the one therapeutic means in this condition. However, in the last decade *x*-ray and radium treatment have demonstrated unusual possibilities. Numerous daily reports occur in this and foreign countries, showing that radiotherapy is a positive curative agent in certain forms of hyperthyroidism. In the ideally coöperative hospitals and clinics, accurate classification of thyroidism results in the treatment of a special type in that therapeutic department best suited for that particular case.

In comparison it has been found that cases treated with radiotherapy reach their normal metabolic rate at the same time as do cases treated with surgery. Under radiotherapy there is a gradual metabolic decline, while following surgery there is a sudden decline, followed by a second rise, succeeded by the final attainment of the normal metabolic rate. Out of a small but interesting series of thirty-one cases, A. M. Claggett, of Chicago, states that eleven cases rejected by leading surgeons as operable risks were cured by radium. In radiotherapy, as compared with surgery, there is no disfiguring scar. The high death-rate in surgery must always be considered; in connection with radiotherapy, if a death-rate does exist, it is extremely low.

It has recently become recognized that enlargement of the thymus gland has been the cause, directly or indirectly, of the death of many an infant whose death has been assigned to some inexplicable cause. Infant-suffocation and heart-shock, the latter frequently considered a result of anesthesia, have been found to be almost invariably the result of enlargement of the thymus. Although the *x*-ray has, for years, been employed in thymus cases, its real value as a therapeutic agent in this field was not until recently recognized. The employment of radium is still more recent. Two and one-half years ago, Heublein, of Hartford, had a very serious case of thymus asthma referred to him for Röntgen ray treatment. Owing to the severity of the condition, he suggested the substitution of radium as a more rapid agent. The result was so marvelous that this practitioner immediately adopted radium exclusively for such conditions. A quotation from Brayton and Heublein will suffice to bring out some extremely important conclusions in connection with the use of radium in the treatment of enlarged thymus glands:

"Judged solely from the end-results there is little choice between radium and *x*-ray. By both methods a cure is effected provided the child survives the effects of thymic pressure until the radiotherapy has had opportunity to reduce the gland. Radium does have certain advantages over the Röntgen ray which may be summarized as follows: Its action is more rapid; one treatment suffices to effect a cure, even in the severest forms of the disease; radium is portable, thus obviating the difficulty of transporting the patient to a Röntgen laboratory; the application of radium is simple, thus eliminating the dangerous element of fear from the mind of the patient."

When one considers the unsightly scars resulting from the surgical treatment of tubercu-

lous adenitis one may marvel but little that so many patients, women especially, both dread and delay treatment for this condition. However, tuberculous adenitis, although found in patients of any age, is more prevalent among children. Regarding adenitis in children Osler says:

"It has been urged that 'scrofula' in childhood gives immunity in adult life. We certainly do meet with many persons of exceptional bodily vigor who in childhood had enlarged glands, but the evidence which Marfan brings forward in support of this view is not conclusive."

On the other hand, it is positive that in many instances an unhealed tuberculous adenitis from childhood has given rise to an infection later in life. One may, therefore, conclude that the only course of safety lies in treatment of the infected glands. Although not all cases of tuberculous adenitis respond to radiotherapy, those cases thus treated are in nowise impaired for other forms of therapy. The prophylactic and hygienic measures, so important in the treatment of tuberculous adenitis, must not be neglected.

In a small series of cases of incipient cataracts treated with radium, 87.5 per cent showed improvement in clarification.

In chronic leucorrhea, as in so many other conditions, the introduction of radiotherapy is of such recent date that conclusions concerning its beneficial results cannot, as yet, be drawn.

Small doses of radium or *x*-ray over the spleen in myelogenous leukemia usually result in a decrease in the number of these cells, with a decrease in the size of the spleen. In this disease there are no reports on record of recovery under any form of treatment.

All leading dermatologists include radium as part of their armamentarium. Although we are not as yet justified in drawing conclusions regarding the entire field, we know that excellent results and, in many cases, cures have been effected by this means. In January, 1914, Heyerdahl, of Christiania, reported before the Medical Society of Christiania, the first case of actinomycosis successfully treated with radium. Since that time numerous other similar successes have been reported. Among the several other skin lesions which have responded most favorably to this form of treatment are pruritus vulvæ et ani, keloids, eczema, chronic non-specific inflammatory lesions, and *x*-ray dermatitis. Radium has, undoubtedly, an unusual field for expansion in dermatological conditions which do not respond to other forms of therapy. I have previously included the results obtained in angiomas and skin cancers.

The day of skepticism regarding the therapeutic value of radium should be a yesterday.

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SURGICAL SHOCK*

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Shock is a term that is made to include almost any sudden loss of energy from hemorrhage, physical injury, over-anesthesia, intestinal perforation, or acute onset of infection.

Various theories have been advanced as to the cause of shock, of which the kinetic theory is the one that seems most acceptable. The kinetic theory assumes that shock is due to excessive stimulation of the energy-transforming organs and that, consequently, the organs especially involved in shock are those whose primary function is the transformation of the potential energy in the body into kinetic energy. The organs concerned in this kinetic activity are the brain, adrenals, liver, thyroid, and muscles. Since every transformation of energy for adaptive ends is accompanied by increased acid production, acidosis is either the final primary factor or, at least, an important factor. In this conception surgical shock is defined as the result of an excessive driving of the energy-transforming mechanism in response to physical injury.

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Clinical Phenomena of Surgical Shock.—The leading symptoms of shock are those of acute anemia, low blood-pressure (often below fifty millimeters of mercury), usually rapid and soft pulse, irregular and rapid breathing (of the Cheyne-Stokes variety), loss of muscular power and tone, blunting of the mind, and subnormal temperature. The old controversy as to whether the arteries are dilated or contracted in surgical shock has been settled, they being contracted. Dilatation of the arteries was a supposition which followed upon the theory that the pathology of shock was an exhaustion of the vasomotor center. The superficial veins are contracted and often in a state of active spasm. On quite a number of occasions this has been very forcibly impressed upon us by the extreme difficulty in getting blood to enter the median basilic or median cephalic veins during blood-transfusion. There was no doubt that the cannula was correctly placed, for in several cases the blood could be seen distending the vein for an inch or two. In blood-transfusion surgeons have several times been compelled to leave the arm veins and give the blood by the internal saphenous in the groin, and even those have been found in a state of extreme contraction.

It has been theorized for years that the abdominal vessels are dilated in shock, but during the late World War it has been found that in early cases of gunshot wounds of the abdomen—before the advent of peritonitis—vasodilatation either of the veins or arteries has not been seen. It has also been theorized that the liver is greatly engorged but this has not been found either at operation or post mortem.

Prevention of Shock.—Therapeutic measures for the relief of existing shock find their prime application in those cases that have resulted from unforeseen causes, such as sudden and severe psychic stress, accident, and physical injury. The factors known to be instrumental in shock production may be foreseen and to a certain extent eliminated or their effects minimized, since all agree that both psychic and physical shock may be prevented. It is obvious that any methods which prevent psychic stress incident to surgical operations and any methods that lessen trauma will lessen the liability to shock. Starvation and purgation of the patient prior to operation predispose to shock, which should be avoided as far as possible, and, in cases of young children, should be dispensed with altogether. Purgation is often overdone and, with the exception of intestinal cases, should not be carried out. When severe operations are to be performed, the mental condition of the patient is also important, and a small dose of morphine given over night and repeated in the morning before operation will do much to prevent shock.

Keeping the patient warm during the progress of a long operation is most important, and, with this end in view, the patient should be so clothed that undue exposure of the skin will not be necessary. The operating table should be warmed as well as the air of the room, and the wound should be kept covered with warm, moist towels.

Technic of Operation.—Any operation necessarily involves traumatism and tends to the production of shock, and much depends upon the extent and nature of the trauma. If the surgeon avoids that class of trauma which most tends to the production of shock, much can be done to prevent it. Cutting with a sharp knife causes the minimum of shock, while tearing of tissues causes the maximum.

Exposure of viscera, cooling of the intestines, dragging upon the kidney in attempts to bring it upon the flank, and pulling upon the mesenteries, produce shock. Time is also an important factor. The surgeon who performs the operation most quickly and with the least handling and bruising of the tissues and who cuts and does not tear, will cause the least shock.

Treatment of Surgical Shock.—Three fundamental principles are essential to the effective treatment: (1) further shock must be prevented by elimination of the conditions which produce it; (2) the circulation must be supported; (3) physiological rest must be secured.

To accomplish the first the surgeon must check hemorrhage, and must remove anxiety and distress; even in cases of shock which have suffered misfortune before the surgeon sees them, he can assist greatly by helping to blunt their sensibilities. For this purpose morphine in adequate doses should be given until the respirations are reduced to twelve per minute.

As to the use of other drugs: Adrenalin is dangerous; strychnine is certainly useless and possibly dangerous; alcohol does nothing but harm; pituitary extract is given on the theory that shock is due to arterial dilatation, and at present we know this theory to be incorrect, therefore the drug is useless unless there is an element of intestinal paralysis; camphorated oil is well spoken of by some, and digitalin is, I think, useful both on theoretical grounds and, as a matter of experience. It does not appear to be universally known how common it is for the patient's pulse to fail during the later stages of an opera-

tion and then to greatly improve—quite apart from any drug treatment—during the stitching up and application of dressings. It is this phenomenon which has given a fictitious reputation to strychnine, pituitary extract, etc.

Certain mechanical measures may raise the blood-pressure in shock. If the patient's head be lowered and the feet raised, the anemia of the brain may be sufficiently relieved to tide over the danger-point. Pressure upon the abdomen by an abdominal binder also may accomplish the same purpose, but such measures are of temporary value. It is obvious that the one logical and efficient means by which to relieve anemia is to increase the amount of circulating fluid in the body. Fluids may be introduced into the circulation either directly or indirectly,—directly by intravenous infusion, and indirectly by rectal injection or by subcutaneous infusion, and by each method the blood-pressure may be raised temporarily. The rectal injection of saline is effective to a limited extent and the subcutaneous infusion is safe and, within a limited range, efficient. Although each of these methods may temporarily increase the blood-pressure, and thus tide the patient past a danger-point, they fail in more severe cases.

The final remedy must be some circulating medium that will remain in the circulation, that will do the work of blood, that will not pass through the blood-vessel walls into the surrounding tissues, and that can be introduced in large enough quantities to develop a peripheral resistance through stretching the elastic blood-vessels. The heart will continue to act as long as the coronary arteries receive a pressure of forty or more millimeters of mercury, and the heart muscle receives proper nutriment. Only one fluid will answer all these conditions—and that is human blood.

DISCUSSION

Dr. Arthur A. Law (Minneapolis, Minn.): The large number of theories in the literature as to the causation of shock is an expression of the befogged professional mind as to what causes shock. The last word certainly has not been said.

We are all familiar with Crile's work and theories. We know that long sustained psychic or mechanical irritation, experimentally produced, causes an exhaustion of the chromaffin in the Purkinje cells of the brain; however, this exhaustion alone does not explain shock. It is almost impossible to produce shock experimentally through irritation of the peripheral nerves. The work of Cannon, Porter, Bissell, and Mann has attracted a great deal of attention.

Bissell and Porter found that their experimental work was paralleled and confirmed by clinical observations. In a study of 1,000 wounded in the late war, Porter found that the only cases of shock he had among these casualties was in cases of fracture of the long bones and in head and abdominal injuries. These observations were confirmed by the observations of other army surgeons who noted the prevalence of shock in the thigh wounds involving fractures, in the tremendous sucking wounds of the chest, and in the abdominal wounds where there was interference with the vascular supply to the viscera. These observations induced Bissell to demonstrate that in cases of shock there is always a pulmonary embolus of fat. He followed this up in clinical work and at the autopsy table following deaths from surgery, and repeatedly demonstrated the presence of fat pulmonary emboli. Porter, by injecting a moderate quantity of olive oil into the veins of animals, was able to produce the typical syndrome of shock and at autopsy demonstrate the pulmonary embolus of fat.

When Doctors disagree, what is the layman going to do? We are not agreed among ourselves. If shock is explained by the kinetic theory, why do we get immediate shock in a man struck over the solar plexus? Delayed shock and immediate shock are different conditions. Shock is manifested almost invariably by a lowered blood-pressure—a blood-pressure which gets down to the danger line.

Porter found that if he stimulated the so-called "pulmonary pump," he could combat shock. Why? We know that under deep inspiration the venous blood in the thorax is 40 mm. less than in the abdomen, the excursion of the diaphragm helping to create the negative pressure; therefore, he resorted to the so-called carbon dioxide treatment,—the rebreathing of expired air; the greater effort of the patient to get oxygen meant deeper respiratory effort with the diaphragm acting as a pump to help force the blood from the abdominal into the thoracic region. He found that he could, by this method, raise the systolic blood-pressure from ten to fifteen mm. of mercury and tide over the danger period.

In shock, particularly the long severe shock in which we have a loss of the alkaline reserve of the body, we know the blood sugar is not decreased, but is rather increased. In these cases of shock we see a complex picture. All of these factors may enter into different cases of shock, no one factor alone is productive of shock. Possibly it is due to exhaustion of the Purkinje cells, possibly, in many cases, to pulmonary fat embolus, possibly to dilatation of the splanchnic vessels, when in cases of a sharp lowering of intra-abdominal pressure, the patient bleeds into his own veins.

Whatever theory of shock we hold, we must know how to combat it. I believe the method of rebreathing is valuable and should be more extensively practiced.

In France, during the war, in some of the more advanced evacuation hospitals we had special shock wards, where desperately wounded men who were in extremis, were sent; they were kept very warm, their heads were lowered, they were kept quiet and were given the opportunity of carbon-dioxide breathing; they were usually given but one drug, namely, morphine; they were transfused if necessary and were given intravenous injections of bicarbonate of soda in an attempt to combat the acidosis, always present in the cases of delayed shock.

What then are we going to do in shock? First, to use an Hibernicism, prevent it; but in the cases of traumatic shock we cannot prevent it, for the shock is generally present before the surgeon arrives. There are cases where it can be prevented. Careless surgery or

the rough handling of tissues or viscera is one of the most common causes of shock; prolonged deep ether anesthesia, unskilled operative technic—all of these things produce shock, and in these instances the surgeon is responsible.

The exhibition of the subcutaneous or intravenous injection of normal salt or the hypertonic solution is a slender reed to lean upon. There is loss of the body fluids in all cases of shock, yet the effect of normal salt or the hypertonic solution is so very transient as to be almost worthless; strychnine or camphorated oil, as well, are practically worthless. Epinephrin stimulates for a little while, perhaps until one can tide a patient over and get him off the table, but it does not carry him far. The use, intravenously, of glucose solutions is of value. The use of gelatine solutions is, I believe, pernicious and dangerous. In combating shock there is a tripod we can lean upon:

1. The application of heat, and carbon dioxide rebreathing.
2. Morphine, the only drug having any particular value in shock.
3. Transfusion, restore the body fluids, here the best restorative we can use is blood.

According to Moss, 43 per cent of all individuals belong to blood group 4, the universal donor group, so, if the surgeon will keep a card index of donors belonging to this group, it does not take long to transfuse a patient badly shocked.

Take any donor from group four, and give the patient a transfusion of citrated or whole blood and the blood-pressure will be raised and sustained.

If in addition we will exhibit heat, morphine, rebreathing, these with transfusion will enable us to save 80 per cent of the cases of shock.

INDEFINITE INJURIES TO THE FEET*

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This paper merely describes a number of conditions that are out of the ordinary, in point of symptoms, which, in the past, have caused me considerable difficulty in differentiating from feigned conditions. I have been guilty of placing individuals in the malingering class when they should not have been, merely because certain injuries are followed by a peculiar train of symptoms. Sometimes, it is following well-recognized injuries that we have these peculiar symptoms, and, sometimes, it is after injuries that at the time seem trivial and there has not even been a disturbance of function.

We all know the foot is one of nature's peculiar constructions where there are a number of bones with no special architectural designs for interlocking or dovetailing, etc., to maintain their position by virtue of their construction. The foot maintains its shape alone by virtue of ligaments and muscular tone. The latter feature has been given a great deal of prominence by orthopedists of late, and is considered the principal factor in carrying the weight of the body and maintaining the shape and flexibility of the foot. Thus is explained the pains in the leg in all cases of early flat-foot.

I do not propose to discuss any of the many injuries of the feet which are well recognized and which have their characteristic signs and symptoms, but only those where the symptoms are almost wholly subjective and, in a small degree, indicative of a previous definite injury.

The most frequent condition for which I have been consulted, is one where the patient complains of pain in one foot or both, usually situated in the outer dorsal area and of a boring, aching character. They will sometimes volunteer the suggestion that the trouble is possibly rheumatism, although they will frequently let one think they turned their ankle, or that, at sometime previously, some tool or piece of iron fell on the foot.

The history usually reveals that these patients are laborers in round-houses, where conditions are more or less damp, or where their feet have been subjected to sudden changes of temperature, as in shoveling hot cinders, cleaning out hot fire-boxes, or standing on hot pipes or parts of an engine while wiping. Again, I have found the condition in mechanics who stand on the side of an engine all day, where the feet have been resting on irregular surfaces. Whether or not it has been a coincidence, I have found in the majority of these patients focal infections of the teeth or tonsils, and have gotten very indifferent results unless these were eliminated. I have concluded that it is advisable to insist upon a change of occupation after a few days' rest. I have made it a point to examine their shoes, because in very many cases their working shoes are very much dilapidated and furnish very poor support. This, of course, should be remedied. This class of cases, in the past, have been a decided source of worry to me.

Another class of cases of almost equal importance, which have occurred even more frequently

*Presented at the annual meeting of the Soo Railway Surgical Association, held in Minneapolis, December 17, 1920.

in my observations, is that of a mild degree of traumatic flat-foot. I do not intend to speak of those marked cases which have been a long time coming on, and which are recognized easily by the gait of the patient or the position of the foot, but of those cases that come on after slight injuries to the foot or leg and are recognized only some time after we have expected the patient should have been well and we have discharged him. Many of these patients have been listed as malingerers and, to the chagrin of surgeons who have thus considered them, they have found someone who has taken interest in them and relieved them completely by some mechanical device to support the arch.

These cases usually follow some simple injury to the foot or ligaments, as jumping or falling from the side of a car and alighting on rough ground. It is, at first, thought to be a slight sprain, and it possibly is, but the fault is that the proper treatment is not insisted upon and the simple condition of sprain is converted into a seriously handicapping flat-foot, simply because the injured ligaments and tendons are unable to support the weight of the body without stretching and without causing, as a consequence, a great deal of discomfort. We can have all the symptoms of flat-foot without having the deformity. We can have the pain when the foot is stepped upon or extended forcibly and not have any deformity of the arch.

I had a case a few months ago, beautifully illustrating the influence of the calf muscles in maintaining the arch of the foot:

A boy was caught between a large block of stone and the side of a bridge, and the muscles of the calf were badly bruised, so much so that the whole leg below the knee became very hard and black from the extravasated blood. The leg finally cleared up, and a few days later he commenced to get about. He then began to complain of pain in the foot, which, in no way, had been injured. The pain kept getting worse and he was relieved only when proper support was given to the arch.

I regard all these cases as "will be" flat-feet. I use Murphy's idea of inverting the foot and keeping it there with long straps of adhesive plaster that pass up the leg to the knee. These are kept on for two or three weeks at least and changed any time that they get too loose to support the arch.

Through the recognition and proper treatment we have diminished very greatly that class of patients who suffered for a protracted time after well-defined and sometimes severe injury of the foot. I have in mind those patients who complained constantly of pain in the leg after being on their feet a few hours, and which was designated as referred pain. This term should not be used in connection with these conditions, and, when so applied, it is evidence to me that we are hiding behind our ignorance or lack of interest. I do not wish to infer that all pain in the leg after injury to the foot is due to strained condition of the muscles or tendons, or is due to mechanical defects in the foot, because some must be classified as rheumatic and due to focal infection. This is especially common in laborers working in damp or wet footwear.

In addition to the above there are other cases not so common, but which, from their unusual beginning and consequent neglect, frequently result more or less seriously.

I will recite two cases in point:

An errand-boy, aged 17, while running across the yard, struck the inner ankle on a lump of coal. He paid no attention to it, although he said the next day it pained him somewhat to walk. I did not see him until the seventh day, when the foot and leg were greatly swollen, intensely tender, and very painful. His temperature was 103°, and he had had a number of chills the previous twenty-four hours. An *x*-ray showed an enlarged inner malleolus with rarefied area, and the medullary canal for a distance of two inches was very dark. Osteomyelitis was diagnosed. The bone was opened and drained, and the condition speedily grew worse and the patient died in thirty-six hours. The infection was pure culture of streptococci.

Another case somewhat similar:

A young man, aged 17, was injured on the under-part of the arch of the right foot by jumping off an engine onto a piece of coal in dark. He complained mildly for a few days and then consulted me. I could find no physical signs of trouble, neither did the *x*-ray show any pathology. I did everything I could think of to relieve the soreness on walking, but with indifferent results. I was about to class him with the neurotics and forget him when an *x*-ray plate finally showed a little enlargement of the head of the fourth metatarsal with some roughening on the outer side. There were no systemic symptoms, and the only local symptom was tenderness on deep pressure under this bone. It was six weeks before consent could be obtained to operate, and at that time the bone had increased somewhat in size. After removal the specimen was sent to the University of North Dakota and a diagnosis was made of probable tuberculosis.

These two cases illustrate the necessity of thorough examination of all cases, even though they seem trivial, and of instituting prompt treatment.

DISCUSSION

Dr. Frederick A. Dunsmoor (Minneapolis, Minn.): Many people are made uncomfortable throughout life by foot trouble, and, as stated by the essayist, the causes seem to be very trivial or even beyond discovery. Many individuals not in the employ of a railroad company have trouble with their feet. This frequently comes

from some defect either of the shoe itself or in the way it is laced. Sometimes the lacings are made so tight at the top that compression of the foot is caused, and that is enough to make one uncomfortable, especially if worn all day.

Dr. Sihler has mentioned one other thing which is a fruitful claim for disability: The patient gives the history of pain on the dorsum of the foot, which should always make us suspicious, and we find on examination that he has a focal source of infection either in the teeth or tonsils. If there has been an injury we know that, with the hope of getting something from the company, there is always a chance of having a lawsuit.

Dr. John M. Dodson (Chicago, Ill.): It seems to me worth while to call attention to the fact that because of neglect of what appear to be trivial matters of this kind, the practice falls into the hands of utterly incompetent persons. For example, in Chicago I have noticed that there is growing up a new cult called "foot specialists," who are nothing but shoe-men, trading, however, on the fact that people with painful feet or conditions that interfere with walking cannot get the proper attention from surgeons. A few years ago rectal surgery was regarded as beneath the dignity of reputable men, and so it was mostly done by advertising specialists. Happily, since that time some surgeons have discovered that rectal work is worth while.

I think these matters are worthy the attention of men with such a degree of surgical skill and training as to be able to treat severe conditions when present, as well as to treat minor conditions, otherwise these patients fall into the hands of incompetents.

Dr. Sihler (closing): Many of these patients complain of their feet, and we know that without feet a railroad employe is not of much service. He usually makes the complaint of having sore feet, or continues to have something wrong with the feet after an injury, in order to get out of work, especially at certain times of the year. Therefore, having this idea in mind we are very apt to let these cases go, and later are very much chagrined when we learn that these patients have gone to somebody who has thoroughly examined them and instituted treatment under which they have improved.

THE MEDICO LEGAL EXPERT*

By Albert H. Parks, A.M., M.D.
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There is probably no position in which the average medical man finds himself, in the course of his professional duties, at a greater disadvantage as to his own peace of mind than when he is called upon to appear in court as an expert witness. It might also be stated that often the result of his appearance is as disillusioning to the court and jury as it is disquieting to the doctor.

It is with the hope that some suggestions may be brought out which may be helpful to the doctor who may be called upon occasionally to appear in court, rather than to offer advice to the experienced expert or alienist, that this paper is presented.

So long as courts exist and litigants cannot agree in controversial matters involving the health, anatomical structure, normal or abnormal —or often as to the cause of death—the medical man is called upon as an expert witness for the purpose of enlightening the court and jury upon those subjects, in which he is supposed to be an authority, because of special study, practical experience, and by virtue of authority granted him by the State to practice the general subject of medicine and surgery. That litigation involving personal injury or health is greatly on the increase is obvious, and is a situation to be deplored.

As the courts now function, the expert medical witness is a necessity, and it devolves upon our profession to supply that need. How we perform our function in this regard rests entirely with us. It is not enough for us to say that we as a body of reputable professional men do not care to undertake this work or to give it enough study and thought to become proficient experts, as this simply throws into court a group of irresponsible members of our profession who represent us before the public and the courts in an altogether undesirable manner. To those who are professionally and temperamentally qualified for experts and are willing to make a study of this branch of work, there is both an opportunity to be a credit to the profession and at the same time earn remunerative fees. There is no more exacting task one can undertake, if it is to be done conscientiously.

The ideal expert is one who has established for himself a personal and professional reputation for integrity, one who has a wide range of general knowledge in the field of medicine and surgery combined with special study and preparation in his particular branch or specialty. He should be able to express himself in simple language that can be understood by the layman, and yet make his professional point clear, to speak loud enough and to enunciate clearly enough to have every one interested in the case get his testimony without confusion. His temperament should be cool and judicial, for the ability to keep his temper,

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often under trying circumstances, is quite essential; and the professional man has a reputation of being a bit temperamental. He should be a clear thinker and be able to say enough without confusing the issue, and, above all things, not be ashamed to say, "I do not know,"—an answer, incidentally, that would have kept many an expert out of deep water. An ability to see ahead and anticipate in his own mind the point towards which counsel is wandering by devious routes has helped many men to arrive at final conclusions in an orderly fashion.

I believe that the present method of selection of experts by attorneys of the plaintiff and defendant could be greatly improved by leaving such selection to the court. The all too common occurrence under the present system of independent retaining of experts, of testimony being in direct and obvious contradiction, is helpful neither to the court nor jury, and is a discredit to the profession in the eyes of the public. I do not mean to infer that all such disagreements could be avoided by such independent selection, but I do believe that the percentage of such disagreements could be reduced, very materially—at least it could be reduced to the average of disagreements in consultations in private practice. An examination held in common with all hospital records, *x*-ray plates, and laboratory data at hand, with a free and frank expression of opinions, would go far, I believe, in arriving at a fairly uniform diagnosis and prognosis.

There is an unfortunate tendency among some claim departments and attorneys to attempt to conceal all information which each may possess and which would help the experts called in the case to determine in advance of trial the true findings. This, of course, leads to disagreements in expert testimony.

The subjective symptoms often lead to a wide variation of opinion, depending upon the expert's belief in the truthfulness of the statements of the patient. An honest difference of opinion in open court occasionally can be well understood and tolerated, with no special harm done except to the feelings of the experts themselves, as in such a circumstance the court and jury usually put no weight whatever on the expert testimony offered.

Human nature works with the same laws in the medical profession that it does in all other people, and it is quite difficult to retain a judicial mind when dealing with the cases of injury or illness which come before us. The attorney and patient are usually certain to make out for their case all there is in it without always due regard to the facts, while the defendant is just as certain to minimize all the findings unfavorable to his cause. To the expert falls the duty of trying to determine the exact point of truth between these diverging views. It is, therefore, most essential to approach the problem from the very start with an unbiased mind. This attitude of mind is not best obtained by having been too long associated with either the plaintiff or the defendant side of litigation as an expert.

An order of the court appointing disinterested experts, together with an order producing all medical records bearing on the case, for the guidance of the experts in the formation of an opinion, would, in my judgment, be an ideal towards which we as members of the medical profession might well strive. An expert witness is not in any sense an advocate, and any tendency to so appear goes further to discredit his views with both court and jury than any other position he may take. The one and only duty of the expert is to present his views on a technical subject to the best of his ability with the one object in view that the court and jury may so understand the subject at hand that a definite and proper conclusion may be reached by them.

Some ingenious explanations and interpretations by experts, obviously endeavoring to create favorable testimony for a particular litigant, remind me of the colored man who, when asked in court if he understood the meaning of the word alibi, replied, "Yes, Sah: it's one of dem times when you prove you was at de lodge whar you wasn't, to prove you wasn't at de crap game whar you was."

Doctors called into court are often confused by a justifiable lack of knowledge of their rights and limitations under the law and are often imposed upon by counsel because of their ignorance of the law.

Any attending physician or surgeon may be called into court by subpena, if the subject of his attention comes into court for adjustment of his alleged claim, but such attendance in court which is involuntary need not call for the qualification of the witness as an expert. He may be questioned as to the facts of his attendance, his diagnosis, treatment, and prognosis, if he made one, but that is as far as he need go unless he voluntarily wishes to qualify as an expert. Any and all questions, or hypothetical questions calling for conclusions of the witness, outside the facts stated above, are subjects for the expert, and as such need not be answered under subpena. The appearance of the

expert is voluntary and should call for proper remuneration.

It occurred to me that the best way we could see ourselves as other see us, and at the same time obtain the best constructive criticism, would be to interview the members of the District Bench. I, therefore, sent a letter to each of the District Judges asking for their criticism of the medical witness as they had observed him. This was not a pleasant duty to impose upon these distinguished gentlemen, but they responded with numerous constructive criticisms which I will quote in part only, as the entire response would be too long for this paper. I have omitted intentionally all favorable references to the profession, as I am now interested only in criticisms.

"Medical men, as a rule, attempt to impress the jury, perhaps also the court, with their extensive use of technical, medical words which have no meaning whatever to the ordinary layman. If the medical man on the witness stand would use ordinary English in expressing himself, his testimony would have far greater weight. I also feel that a medical man in testifying should be emphatic and positive, if possible. Of course, we must admit that lawyers in their examinations attempt to have the doctor testify that either possibly or probably such might be the case, whereas in fact it appears to the court, at least, that a man in that position should have some definite knowledge, or at least some definite idea and could testify accordingly."

"The subject of expert medical testimony has been the subject of criticism in courts to quite a considerable extent. In your profession, as in every other profession, there are always men who are more or less hangers-on to the profession and who, in my judgment, often lend themselves to unjust causes and are biased advocates on the witness stand."

"The engaging of a physician or surgeon as an expert and the payment of large fees very frequently make the expert an advocate instead of an unbiased witness. While there are a great number of men in your profession—and I am glad to say the greater number of them, even under trying circumstances—maintain an unbiased attitude when called to the witness stand, yet there are many instances, subject to human weaknesses as they are when they appear to be advocates and to champion the cause of the side by which they are called."

"The subject of expert testimony has been a sore spot with the courts for a long time, and, if something could be done to place it on a better basis, it would be a welcome reform in our courts."

"When a lawyer may engage a physician or surgeon, interest him in the cause, and pay him large fees for his testimony, he naturally becomes, if he has any weaknesses at all, an advocate. I think it would be a benefit and a help if the experts were paid by both sides, and selected by the judge, for the simple reason that I know of no other way of selecting them, or else there should be a limit placed upon the fees which they may receive, and that should be placed at a very low figure, so that there would be no temptation for the sale of expert testimony or to purchase advocacy on the part of the expert witness."

"In stating facts the great majority of doctors I have seen in the courts are too technical in their language. The average juror knows nothing of anatomical terms and when a doctor says, 'The posterior aspect' of something or other, he has no idea what is meant. 'The back of the thigh or the hind part of the head,' would be understood. The deeper you get into the subject the more unintelligible you are, if you use language of the profession. Talk to the jury as though they were little children, and they will know what you mean and thank you for your simplicity. I have seen many a doctor leave the stand, especially when examined by a 'smart aleck' of a lawyer, who wanted to use his own knowledge of medical terms, without giving the jury any clear idea of what he had been talking about. Of course the most ignorant man of the twelve, is the one to whom the testimony ought to be addressed."

"In giving opinions, too many medical witnesses are controversial, and, of course, the minute a fair-minded jury thinks the witness is taking sides, that minute the witness, especially as respects opinions, begins to be discounted. The system is questionable to say the least. When a party brings in his expert witness just as he brings in his lawyer, why should the opinion of the expert be on a very different plane from the opinion of the lawyer, which usually counts for nothing? I hope that eventually some plan will be worked out whereby experts will be called in by the court and paid out of public funds."

"I have been full of criticisms in the past with reference to expert medical testimony, feeling, first, that in a great many instances the physician was not honest in his testimony. I have felt in a great many instances that the physician would testify equally well had he been called to testify for the other side."

I shall not quote further, for most of the points given cover the majority of criticisms in substance.

CONCLUSIONS

The necessity for expert witnesses is a legitimate demand upon our profession which must be met.

The better the character and preparation of men doing this work, the better will be the standing of the profession before the courts and the public.

The coöperation of the profession in endeavoring to improve the method of selection of experts is desirable.

The profession should benefit by the criticisms of competent observers of their faults in the past.

The profession should discourage litigation among their patients whenever possible.

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MINNEAPOLIS CLINIC WEEK

Perhaps some of our readers are getting tired of THE JOURNAL-LANCET'S very frequent reference to Clinic Week, but the Hennepin County Medical Society feels that a little explanation of this last Clinic Week should be forthcoming.

First, we declare without hesitancy and without fear of contradiction that this year's Clinic Week was the best we have had. We think it was the best week for our program, and, although the number of hospitals giving clinics was somewhat narrowed down, the attendance was markedly improved, and the ultimate outcome of the Clinic may be that only a few hospitals, those that are large and convenient, will be used for the next Clinic Week, which will be held in April or May, 1922.

The attendance was much larger than we had expected. The registration from outside this city was nearly 400. The registration from Minneapolis was comparatively small. For some reason or other the men in Minneapolis seemed to think that their registration was unnecessary, and a request has been made that every man who attends a clinic during Clinic Week, even though he attends only the afternoon hours, register as a guest, be he an active clinician or a member of the Clinical Section, or if he is a member of the Hennepin County Medical Society. Even those who are not members of the Hennepin County Medical Society should register to show their good will and their interest in clinical Minneapolis, and perhaps prepare themselves to join the largest county society between Chicago and San Francisco.

It is gratifying to note that the medical clinics were much better attended this year than in the years before, and that is due partly to the fact that two or three men combined to hold a medical clinic, so that the visitor got the viewpoint of the internist, the surgeon, and, let us say, the neurologist, or the gynecologist. This added greatly to the interest of the case, and was evidently much appreciated by the guests of the Clinic. It opens up a little better line of attack for next year,—this giving of a clinic by a small group of men who have been associated with a particular case.

There were enough operations performed to satisfy the most exacting, and the man who operated on three of four cases during the day was just as popular as, and perhaps more efficient than, the man who did from fifteen to twenty. Although it is quite possible for a man to do so many, it must require a good deal of expertness, preparation, and method to cover so enormous a field as this number of operations requires.

Our first Clinic, held four years ago, sent us representatives from nine states. It happens this year that the same number of states were represented in the Clinic. Evidently, there is some force which attracts the visitor, and it is to be hoped that it is the thoroughness with which the clinical work is done and the wealth of material which prevails in Minneapolis.

Then, too, the Committee hit upon a happy solution of the afternoon hours. A special committee was appointed, which chose special topics for discussion. On Monday afternoon, April twenty-fifth, "Anesthesia" was the subject under discussion for one hour, and it was discussed from various angles by men especially equipped to do so. This occupied the time of four men from four to five o'clock. The guest of honor for the day was Dr. Kellogg Speed, a surgeon from Chicago. His topic was "Appendicitis in Children of Twelve Years or Under." And he, being a foresighted man and a good speaker, talked in a manner that every man who had had any experience with children could appreciate his discussion of a familiar topic. It is doubtful whether any man in the room who was a guest from out of the city had not seen one or perhaps more cases of appendicitis in children as described by Dr. Speed. His address that day was particularly illuminating, and very understandable, and the men who heard him felt that they

had been talked to in a conversational way by one of their own fellows.

On Tuesday Dr. Speed discussed "Fractures of the Femur in Children under Fourteen," and his manner, address, and presentation of the subject were of the same style that characterized his address on Monday,—simple, plain, and forceful, and he put the subject before his audience in such a manner that most of the men could sympathize with him. He told them that many times he had had not only unexpected but unfortunate results. Incidentally, it must have been a great comfort to the surgeon who has to deal with fractures of the femur in children to know that men of Dr. Speed's caliber are not always able to prevent deformities. It further illustrated the fact that the fathers who do not care to pay their bills and the unscrupulous lawyers who attempt to blackmail the doctor by suit for malpractice, can rarely maintain their grounds. Doubtless many men, particularly those in the country and frequently those in the city, hesitate to treat a fracture for this very reason,—that the result may not be as expected, and the operator may be damned for his efforts, particularly if the result is not gratifying to the patient or his friends. This sort of plain speaking, which is characteristic of Dr. Speed, is rather discouraging to the "damage-suit" lawyer, for he must know that even under the best conditions fractures are not always dependable as to their outcome.

On Wednesday afternoon the man we all love and honor, Dr. James B. Herrick, of Rush Medical College, Chicago, talked on "Pain in Heart Disease," during the afternoon hour. That same evening, at the annual banquet of the Hennepin County Medical Society, Dr. Herrick talked on "Certain Clinical Features in Metastatic Tumors." Dr. Herrick's papers were both of the same high order that characterizes all of his work. He, too, was simple in his talks, and spoke in a way that reached the hearts of the men. They were all on the same footing, and all felt that they belonged to one and the same organization,—that of medicine. Dr. Herrick told us in the evening that he had appeared before the Hennepin County Medical Society at its annual banquet nineteen years ago. He was very happy in his opening remarks, in which he indulged in a good deal of quiet humor, and said he had been assured by two men that on his first visit to Minneapolis he had been introduced by both of them.

Just before Dr. Herrick's afternoon talk, on Wednesday, the first hour was occupied by a discussion of "Duodenal Ulcer: Medical versus Surgical Treatment." This was discussed by two surgeons and by two internists, just as in the discussions of Tuesday, on "Lethargic Encephalitis" three men spoke of the pathology, the diagnosis, and the treatment of the disease. Both afternoons drew crowded houses, and evidently the discussions were very much to the liking of the listeners. The Journal-Lancet had hoped there might be a little more opposition, more like a debate, something with a little snap in it, but these criticisms are unnecessary on account of the interest the subjects elicited.

On Thursday afternoon the subject under discussion was "Practical Laboratory Work and Its Value," which was very ably handled by four men who talked for fifteen minutes each. (We hope to get these discussions in order and have them printed for further reference.)

"The guest of honor" on Thursday was Dr. Walter Timme, Attending Neurologist for the New York Neurological Institute, who talked on some of the endocrine problems, and he illustrated his address by lantern-slides of cases which showed this phase of the subject. Dr. Timme is a brilliant speaker, and before the close of his address he had carried his audience with him because of his interest in his subject and the interest he created in his hearers. They went away feeling that the address was one of the best of the series. He was complimented on all sides on his presentation of a subject of which there is so little actually known, and he has aroused an interest in endocrinology which will be lasting. He received a tremendous ovation from the men who heard him, and evidently created an impression which will make Dr. Timme's name well known in the Northwest.

Each day, of course, clinics were going on in the hospitals, and the reports of the clinicians and the hospital authorities are that they were well attended.

The editor of The Journal-Lancet would like to extend his thanks to the superintendents of the hospitals, who were part of his committee on hospital programs, for their active work, for their keen interest in the success of Minneapolis Clinic Week, and for the promptness with which they sent in their material.

ANATOMY AND ART

The writer is constrained, perhaps, to introduce a subject of this kind into a medical journal;

but, when one reflects upon the topic, it is more or less apropos.

From a scientific point of view every physician is interested in anatomy, and as he has gone through a course of instruction and dissection and comparison he should be more or less qualified to offer criticisms of the anatomical side of art. Nevertheless, the subject is approached with considerable temerity. For instance, many of the older pictures which now adorn the walls of museums and which are looked upon as almost sacred, from an artistic point of view, should be considered apart from a historical point of view, and, in many instances, wholly from a religious point of view. A large number of paintings in early times were really painted as an example of some religious expression, and, consequently, one sees the varying types of the old masters and their methods.

What could be more widely diversified than the Christ head, painted by innumerable artists? Some of them have caught the expression of sublimity and the very essence of the highest form of religion. Others have depicted woe, sorrow, and complete despair in their representations of Christ.

Then, very naturally, follows the anatomical display of body and limbs that sometimes are not strictly in accordance with anatomical truths. Many of the subjects outlined are drawn by men who, great painters though they were, were wholly unable to present anything but a sharp profile. They could not draw the body in perspective, consequently, they presented some sorry-looking anatomical exhibitions.

If one considers the deformities that affect the human race, then the deformities in pictures may be explained by faulty drawing; hence they were not purposely misrepresented. Otherwise one might suspect that the work was done by an orthopedist who attempted to outline the deformities of limbs and other parts of the body; but it is still quite evident that there are some pictures which the orthopedist would criticize very justly. For instance, the saints are sometimes represented in gorgeous array of costumes, beautifully painted features, and rounded faces delightfully colored and more or less expressive, but sometimes not as much as they should be; and then to find that this superdressed and wonderfully painted individual had a talipes equinovarus!

This, of course, to the modern observer is a striking deformity in the picture, and distracts more or less from the whole situation, beautiful as it may be.

Some of the Spanish artists, one in particular, had a very faulty method of presenting arms and legs. They look like cases of pseudohypertrophic spinal paralysis. The muscles are thin at points where they should be normal, and greatly increased in size where there is no necessity for it, giving the appearance of diseased arms and legs. Again, we must refer to the fact that in the days when these religious pictures were painted the artist failed to appreciate the perspective of his subject; perhaps they were drawn without a model.

Then, too, a great many of the old pictures representing groups of people are interesting studies in facial expression, and they present frequently various stigmata of what we now call degeneration. The same fault was the excuse for these elegantly constructed faces and bodies, lack of perspective, failure to understand the simple lines of drawing.

The artist of today, however, is quite another man. He has recognized the faults and deformities of his early brethren; he has modified the poorer drawings of the middle school; and sometimes he is strikingly up to date in his perfection in drawing the human anatomy. He draws the human being from a human model, and, even though there is a proof of the realization of anatomical perfection, it is still a beautiful work of art.

But the cleverer sketcher leaves much to your imagination; the cleverer artist, nothing. The man who sketches a form by the exhibition of a few lines perhaps is the better artist in that he appeals to a certain type of people, who can see themselves as they are, and yet the labors of the sketcher seem very inferior to the work of the artist. Still, who can sit down and gracefully depict the human form by simply outlining a shadow of the human form? That requires, in our judgment, the highest type of artistic temperament, although it may not be as pleasing to the eye.

Of course, some of the older artists drew and painted wonderful pictures from models. They had the real artistic touch; they saw the possibilities of the human form in natural positions; they had the correct eye for the rotundity or the smallness of groups of muscles, and they presented them in a most entrancing manner. For instance, there is Goya, the Spanish artist who painted "Desnuda," with all the vigor and dash

of the great painter that he was. This is said to be of all the nudes of Europe the nudest. "Goya here was not interested in the spiritual or poetic aspect of his subject, but only as an animal, as an anatomical specimen. Knowing the ardent and turbulent character of the man it is difficult to reconcile the cold detachment with which he viewed his model. Every delicate muscle seems throbbing, every hair tingling with life, but we feel that a surgeon, scalpel in hand, is looking at her."

The anatomical artist of today is evidently very closely associated in the advertising field with the magazines. There he presents rather typical pictures of typical people, and he has a way of thrusting in a little color and form and anatomy that are true to life, and yet the picture represents a type of individual. These wonderful pictures that adorn the front pages of some of the better magazines are taken from living models and are copied very accurately, or, at least, are embellished so that they appear very beautiful.

We must not forget, however, that art is very old, and even the old-time artist presented his subject as a beautiful maid with a pleasing expression, a wonderful inspiration, and a living impression, and a suggestion which was followed by others who were of the same temperamental class.

Our medical books supply all we need in the way of deformities and atrophied muscles and limbs, without going to some old painting to study abnormal anatomy.

BOOK NOTICES

COLLECTED PAPERS OF THE MAYO CLINIC, Rochester, Minn. Edited by Mrs. M. H. Mellish, Vol. XI, 1919. Octavo of 1,331 pages, 490 illustrations. Philadelphia and London: W. B. Saunders Company, 1920, cloth, $12.00, net.

This volume contains articles from forty contributors, and the entire contents cover space of about twelve hundred pages. Surgical problems are given special consideration throughout and are presented in a graphic manner, free from tiresome detail.

The book is rich in illustrations, which precludes the necessity for written detail.

These papers were read by the men of the Clinic during the year 1919, and represent fairly well the work being done by them.

The contributions are of such a range that the field of medicine and surgery is quite well covered.

The first section presents the surgical aspect of tumors of the alimentary canal, by C. H. Corkey, special reference being given to the stomach, duodenum and gall-bladder. An interesting article by Reeves presents the relation of blood supply of the stomach and duodenum to the formation of ulcers. He shows the predisposition of arteries along the lesser curvature of the stomach and throughout the first inch of the duodenum towards thrombosis,—an important factor in ulcer production by hematogenous infection.

Carmen, in his article on "Operability of Carcinoma of the Stomach," demonstrates the feasibility of determining the operability of carcinoma by the *x*-ray. He groups the gastric tumors as follows:

1. Tumors of Pars Pylorica—the operable zone.
2. Tumors of Pars Media—the questionable zone.
3. Tumors of Pars Cardiaca—the definitely inoperable zone.

In this way *x*-ray has a decided value in prevention of operations in inoperable cases and in early recognition of operable conditions of the stomach.

The second section deals with the urogenital tract and the internal glands. It presents the results of experimentation, methods of diagnosis, surgical treatments, and post-operative results.

W. F. Braash presents a paper on "The Advance of Diagnosis of Surgical Lesions of the Kidney." This advance has been largely in the field of röntgenography and renal functional tests.

E. S. Judd, in his article on "Surgery of the Kidney," states that in removal of tuberculous kidney the perirenal fat should be completely removed and the cut end of the ureter isolated, in order to preserve a clean wound.

In order to prevent infection of a wound from the cut end of the ureter, W. J. Mayo plans to suture the end to the skin. If the ureter is too stiff to mobilize, the ligated end is threaded into a rubber tube, which projects from the wound.

"Tuberculosis and Surgery of the Thyroid" is ably presented by W. A. Plummer, A. C. Broders, and W. E. Sistrunk. The mortality following surgical procedures has been greatly decreased by recognizing the type of operation best fitted to the individual case, and because there is the tendency to operate earlier in the disease.

The section on the heart, trunk, and extremities is handled comprehensively, twenty-five papers being devoted to this section.

The surgical study of nerves is presented in three papers, while the general and surgical technic section contains many new and practical improved methods.

Some of these articles represent much research work done in the Clinical Laboratories. New theories have been worked out, and some problems solved that were impossible of solution under ordinary conditions. Results of these investigations are set forth in several papers published in the volume.

The wealth of material in some divisions of the Clinic, with the statistics given, makes the conclusions of great value to the profession.

An exhaustive study of the literature has been made by some of the authors.

The book is very attractive and has a complete index system.

The papers are generally short, to the point, and written in an interesting manner. There are a few long articles detailing the results of much study and investigation. Papers written by men who have been with

the Clinic a long time will have great weight with the profession because of the experience of the writers.

Probably no medical publication will find a more ready sale among the profession because of the facilities in the Clinic, the statistics offered, and the reputation of the authors.

ARTHUR E. BENJAMIN, M. D.
CARL F. JONES, M. D.

THE ROENTGEN DIAGNOSIS OF DISEASES OF THE ALIMENTARY CANAL. By Russel D. Carman, M. D., Head of Section on Roentgenology, Division of Medicine, Mayo Clinic. Second edition. Cloth. Price, $8.50 net. Pp. 656, with 626 illustrations. Philadelphia: W. B. Saunders Company, 1920.

After three years the author has found it necessary to make certain revisions and additions to this work. It is a rather conservative presentation of the subject, which is in its formative period. This is what would be expected from a master hand with such a wealth of opportunity to draw from.

The additional chapter on hour-glass stomach will be appreciated. Also the chapter on pneumoperitoneal diagnosis.

Carman prefers and uses more extensively the screen, and so writes from this viewpoint, but he uses the plates, especially for confirmation. He cautions against trusting wholly to the screen examination, insisting on two or more plates in every case to show minute deformities, which cannot always be detected on the screen. He also cautions against the hazard of judging entirely from the plates, especially if few in number. His two practical tests against error are re-examination and antispasmodics. It is comforting to read his confession that the "veteran röntgenologist, as well as the novice, is tempted to see too much rather than too little."

This very practical and sane book will find its place in the library of every Röntgen student.

C. A. DONALDSON, M. D.

EXOPHTHALMIC GOITER AND ITS NON-SURGICAL TREATMENT. By Israel Bram, M. D., Instructor in Clinical Medicine, Jefferson Medical College, Philadelphia. Octavo, 400 pages, price, $5.50. St. Louis: C. V. Mosby Company, 1920.

In the first portion of this book Dr. Bram has painstakingly reviewed for his readers the fundamentals necessary for a true understanding of the subject; namely, anatomy, physiology, and pathology. The pathogenesis is then discussed in detail and the various theories outlined. The symptomatology is minutely described, with a discussion of the various complexes and signs and their relationship to each other and to thyroid disease in general, the point being made that exophthalmic goiter is essentially an incoördination of the autonomic nervous system, rather than a disturbance local to the thyroid gland. The differential diagnosis is unfortunately very brief. The various diagnostic tests, however, are taken up in detail, especially the basal metabolism, Goetsh, thyroid extract, and hyperglycemia.

Following this extensive review of the etiology and diagnosis, the non-surgical treatment is taken up in gratifying detail. The influence of climate, of rest, and of exercise, is carefully reviewed. The subject of diet is taken up fully, including a number of sample dietaries. Organotherapy is treated fully, as are also the usual medicinal agents, both for local and systemic use. The use of *x*-ray and radium is reviewed from personal experiences of the author and from the literature, but without any new conclusion, except that inasmuch as Dr. Bram's plea for the non-surgical treatment is that exophthalmic goiter is a systemic disease and not merely a thyroid disorder, so he also believes that the fault of *x*-ray and radium therapy is that they are directed only at the gland, instead of at the entire system. A number of case-histories are given with detail dietary, hygienic and medicinal treatment.

In conclusion, the author again stresses the fact that his opposition to surgical treatment is that he believes ligation or thyroidectomy to be local only, and exophthalmic goiter to be a general or systemic condition. Dr. Bram further states that the simple non-toxic goiter is an entirely local condition and, as such, may be removed surgically, or, in other words, locally, but not so the exophthalmic or toxic type.

DONALD MCCARTHY, M. D.

NEWS ITEMS

Dr. C. P. Nelson, of Minneapolis, has moved to Owatonna.

Dr. J. P. McDowell, of St. Cloud, has been doing postgraduate work in Chicago.

Dr. M. D. Kramer has moved from Roscoe, S. D., to Dupree, S. D.

The people of Duluth propose to raise $1,000,000 for St. Luke's Hospital of that city.

The Fargo Clinic building, erected at a cost of $90,000, was opened by a public reception yesterday.

The new administration building of the Glen Lake Sanatorium (near Minneapolis) was opened last month.

The summer graduate medical courses given by the Medical School of the University of Minnesota are being well attended.

The governor of Montana has reappointed Dr. J. M. Scanlan superintendent of the Montana State Hospital at Warm Springs.

Dr. H. M. Freeburg, of Watertown, S. D., has returned from taking a postgraduate course in Tulane University in New Orleans.

The program of the annual meeting of the South Dakota State Medical Association will be found at the end of this department.

Dr. Lyle Brown, city health officer of Crookston, has petitioned the city council of Crookston to erect a quarantine hospital building.

The State Board of Health of South Dakota, at its meeting last month, appointed Dr. H. D. Sewell, of Huron, health officer of that city.

Dr. Hugh W. Reynolds, of the Adams Hospital, of Hibbing, is spending the month of May in Minneapolis studying diseases of children.

Dr. H. J. Connor, a pioneer physician of Superior, Wis., died last month at the age of 62. Dr. Connor was a graduate of Rush, Class of '83.

The third annual meeting of the Association of the Resident and Ex-Resident Physicians of the Mayo Clinic will be held in Rochester on May 18 and 19.

Dr. T. C. Patterson, of Lisbon, N. D., is in Minneapolis for several weeks doing post graduate work. He is especially interested in the latest methods in anesthesia.

Dr. Louis F. Molleur has given up practice in Virginia City, Montana, and will locate elsewhere. He is the only physician listed this year in that city by the A. M. A. Directory.

Dr. J. B. Carey, of Minneapolis, was married last month to Miss Margaret J. Gillespie, of Anoka. Dr. Carey is a 1920 graduate of the Medical School of the University of Minnesota.

Dr. W. K. Quackenbush, formerly superintendent of the Ottertail County Sanatorium, has been appointed superintendent and director of the Buena Vista Tuberculosis Sanatorium at Lake City.

Dr. A. S. Hamilton, of Minneapolis, professor of nervous and mental diseases in the Medical School of the University of Minnesota, has been appointed a member of the Administration Board of the School.

Dr. P. A. White, who has been associate surgeon in the Aberdeen (S. D.) Clinic, has formed a partnership with Dr. Willian Allen, a surgeon of Davenport, Iowa, to which city Dr. White will move at once.

Tuberculosis and children's clinics seem to be held in the "Range District" of Minneapolis more generally than at any other point in the Northwest. The State Tuberculosis Sanitaria take a large part in this admirable work.

Dr. Walter Timme, of New York, who came to Minneapolis to deliver an address at Minneapolis Clinic Week, also gave a Mayo Foundation lecture in Rochester on his way home. He spoke on the "Endocrine Glands."

The Luverne Hospital, owned and conducted by the late Dr. A. E. Spalding, has been leased to Drs. C. O. Wright, C. L. Sherman, E. O. Thorson, and J. B. Stevens. Dr. Wright will continue as superintendent of the hospital.

The fourth annual meeting of Minneapolis Clinic Week (April 25 to 28, inclusive), was attended by more men from outside the Twin Cities than are ever found at the State Medical Association when held in either of the two cities.

North Dakota has fewer physicians according to population than any other state in the Union. It has one physician to 1,161 persons in the state. Three Southern states,—South Carolina, North Carolina, and Mississippi,—follow in the scale.

Drs. W. J. and C. H. Mayo have been notified that Honorary Fellowships in the Royal College of Surgeons of Ireland will be conferred upon them as soon as they can attend the ceremony, which will be held in the College Hall of the University.

The Sioux Falls (S. D.) District Medical Society will hold its June meeting on the 14th, and the following program will be given: "Organotherapy," Dr. E. E. Gage; "Physicial Therapeutics," Dr. W. Craig; "Treatment of Syphilis," Dr. S. A. Donahoe.

A noticeable feature of the fourth annual Minneapolis Clinic Week was the total absence of exaggerated statements, both as to the attendance and the character of the work done, in the daily papers, which is pleasing to all members of the Hennepin County Medical Society.

Dr. E. O. Giere, formerly of Watertown, S. D., who has just assumed the management of the St. Paul Hospital, of St. Paul, informs us that the capacity of the hospital (110 beds) is overtaxed, and that it will, no doubt, be increased to 250 beds when times will permit building operations at a reasonable cost.

May 12th, the anniversary of the birth of Florence Nightingale, was designated "National Hospital Day." It was suggested that it be observed annually to bring to the attention of the public the work and the needs of the 8,000 hospitals in this country. We do not know yet how general was the celebration of this first observance of the day.

The Huron (S. D.) Medical Society met by invitation May 5th at De Smet, with a somewhat unique program, as follows: "Present Financial Conditions," by a Federal Reserve banker; "Medical Jurisprudence," by Mr. W. H. Warren (presumably a lawyer); and "Some Observations of the Medical Profession," by Rev. J. N. Oakley.

The Medical Alumni of the Hamline Medical School still maintain their organization despite

the fact that the School was long ago merged with the Medical School of the University of Minnesota. At their annual meeting held in April, the following officers were elected: President, Dr. G. F. Swinnerton; vice-president, Dr. Thos. J. Warham; secretary-treasurer, Dr. L. D. Debogat.

The physicians of Detroit, a famous summer resort of Northern Minnesota, will entertain the Northern Minnesota Medical Association on May 24th and 25th. Dr. John M. Dodson, of Chicago, and a number of Twin City physicians will read papers. Detroit is also, on this occasion, a stop-over place on the way to Fargo, where the annual meeting of the North Dakota State Medical Association meets on May 26th and 27th.

The Southern Minnesota Medical Society presents an attractive program for its mid-summer (June 27th and 28th) meeting at Winona. There are sixteen papers on the program. Of these seven are presented by Rochester men; one each by Twin City men; and three by other Minnesota men. There are four papers listed by men outside of the state as follows: by Dr. D. L. Edsall, of Boston; Dr. A. B. Kanavel, of Chicago; Dr. F. J. Gaenslen, of Milwaukee; and Dr. N. J. Nessa, of Sioux Falls, S. D. The entertainments will be "q. s."

The Minnesota State Board of Health at its meeting last month, made the following appointments: Dr. A. J. Chesley, secretary and executive officer, to succeed Dr. C. E. Smith, Jr., who is unable to do the work on account of poor health; and Dr. Orianna McDaniel, director of the division of preventable diseases, to succeed Dr. Chesley. Dr. McDaniel has long been at the head of the Pasteur Institute conducted by the Board. These promotions are highly commendable, and give assurance that neither politics nor political methods rule the action of the Board.

Dr. Edward S. Frost, a pioneer physician and highly respected citizen of Willmar, died on May 2d, at the age of 79, in Minneapolis. Dr. Frost was born in St. Johns, New Brunswick; was graduated from the Kentucky University at Frederickstown; graduated in medicine from the University of Pennsylvania; did postgraduate work in Paris; served in the Red Cross in the Franco-Prussian war; practiced in New York City one year; and thence to Willmar, where he practiced until two years ago. Such was the mental, moral, and scientific equipment of not a few Northwestern pioneers, whose praises we may well sing, and to whom we may give thanks for "what they did here."

TENTATIVE PROGRAM

of the Annual Meeting of the South Dakota State Medical Association, May 24, 25, and 26, 1921.

Business Session

Tuesday, May 24, 2:30 p. m.

Meeting of House of Delegates.
Report of Secretary-Treasurer and of Standing Committees and Appointment of Committees.
Meeting of Board of Councilors, 3:30 p. m.
Financial report of Secretary-Treasurer.

Wednesday, May 25, 9:00 a. m.

Hyperleukocytosis in Extreme Sepsis. Dr. D. B. Rice, Aberdeen, S. D.
Discussion opened by Dr. P. R. Billingsley, Sioux Falls, S. D.
Direct Laryngoscopy, Bronchoscopy, and Esophagoscopy as Diagnostic Aids. Dr. C. C. Hoagland, Madison, S. D.
Discussion opened by Dr. L. N. Grosvenor, Huron, S. D.
The Prognosis and Treatment in Laryngeal Tuberculosis. Dr. J. B. Gregg, Sioux Falls, S. D.
Discussion opened by Dr. R. E. Woodworth, State Sanitarium for Tuberculosis, Custer, S. D.
Finney's Pyloroplasty. Dr. T. F. Riggs, Pierre, S. D.
Discussion opened by Dr. R. L. Murdy, Aberdeen, S. D.
United States Public Health Service. Dr. L. A. Walker, Supervisor, District No. 10, Minneapolis, Minn.
Discussion opened by Drs. J. D. Whiteside and M. C. Johnston, Aberdeen, S. D.

Wednesday, May 25, 2:00 p. m.

President's Address

Medical Progress. Dr. Harry T. Kenney, Pierre, S. D.
Cesarean Section for Placenta Previa. Dr. Donald Macrae, Jr., Council Bluffs, Iowa.
Discussion opened by Dr. B. A. Bobb, Mitchell, S. D.
Treatment of Tuberculous Empyema. Dr. Carl A. Hedblom, Rochester, Minn.
Discussion opened by Dr. M. M. Grove, Dell Rapids, S. D.
Osteomyelitis, with Discussion of Bone Pathology. Dr. A. C. Stokes, Omaha, Neb.
Discussion opened by Dr. Percy Peabody, Webster, S. D.
The Status of the Bone-Graft in the Treatment of Fractures. Dr. Melvin S. Henderson, Rochester, Minn.
Discussion opened by Dr. S. M. Hohf, Yankton, S. D.

Thursday, May 26, 9:00 a. m.

New Statutes Concerning Vital Statistics. Dr. Park B. Jenkins, Waubay, S. D.
Discussion general.
Workman's Compensation Laws. Hon. S. A. Travis, Deputy Industrial Commissioner, Pierre, S. D.
Discussion general.
Negative Pressure in Empyema. Dr. N. C. Ramstad, Bismarck, N. D.
Discussion opened by Dr. H. Klima, Tyndall, S. D.
When Shall We Operate for Mastoiditis? Dr. Frederick E. Franchere, Sioux City, Iowa.

Discussion opened by Dr. R. D. Alway, Aberdeen, S. D.

Suppurative Appendicitis and Peritonitis. Drs. Bartron and Sherwood, Watertown, S. D.

Discussion opened by Dr. R. G. Stevens, Sioux Falls, S. D.

THURSDAY, MAY 26, 2:00 P. M.

Fracture-Dislocation of the Head of the Humerus. Dr. G. G. Cottam, Sioux Falls, S. D.

Discussion opened by Dr. J. W. Freeman, Lead, S. D.

Clinical Talk on Fractures of the Elbow. Dr. F. E. Clough, Lead, S. D.

Discussion opened by Dr. O. R. Wright, Huron, S. D.

Glandular Fever. Dr. Goldie Zimmerman, Sioux Falls, S. D.

Discussion opened by Dr. C. E. McCauley, Aberdeen, S. D.

The Prevention of Acidosis and Treatment of Diabetes. Dr. Michael Ebert, Webster, S. D.

Discussion opened by Dr. Louis Holtz, Aberdeen, S. D.

OUTFIT OF FINE INSTRUMENTS FOR SMALL HOSPITAL OR COUNTRY PRACTITIONER

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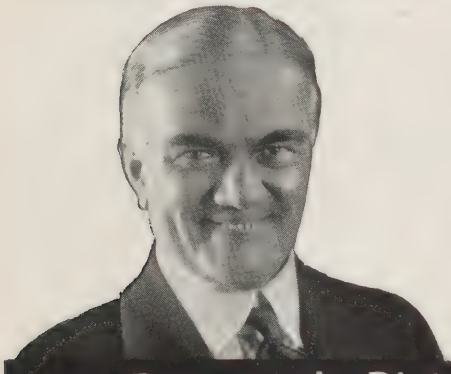
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THE CARE OF THE NURSING MOTHER

The period of lactation is always a trying one for a nursing mother, and when, in addition, she takes care of a household, as is so often the case, it is not surprising that her body proves unequal to the burden placed on it. Loss of flesh usually follows as a consequence of the general depression of her nutrition. Naturally, under these conditions, a mother's milk gradually becomes lowered in quality, and sooner or later her offspring begins to show the effects. Its digestion is impaired, its nutrition also fails to a marked extent, and bodily growth is stopped.

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The Company also sell instruments of precision, especially thermometers, barometers, hydrometers, etc.

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Their address is Scientific Instrument Company, 4300 East Lake Street, Minneapolis, Minn. Telephone No. Drexel 0843.

THE IMPORTANCE OF NUTRITIVE REPAIR

In the treatment of all bodily disorders, associated with loss of weight and general vitality, nutritive repair is too patent to need more than passing emphasis. The question of how best to bring about such a desirable result is, however, one that the physician is daily called upon to answer, and upon his ability to "build up" his more or less devitalized patients will largely depend his success in the treatment of chronic affections. Taking, for example, a patient suffering from pulmonary tuberculosis in the incipient or secondary stage, what are the approved measures to adopt to bring about improvement of nutrition and a consequent gain of weight and strength? All phthisiotherapists now agree that the therapeutic trinity of salvation for the tuberculous invalid is composed of (1) fresh, pure air, in abundance, both night and day; (2) a properly balanced ample supply of nutritious food; (3) plenty of rest, especially during the febrile period.

While medication is useless, unless the patient is properly fed, "ventilated," and rested, as above referred to, there is no doubt that intelligent medical treatment, designed to promote nutrition, is indicated in a majority of cases. If the tuberculous patient has been neglected, for any length of time, some degree of anemia is almost always present. In such cases, an absolutely bland, non-irritant, readily tolerable and assimilable form of iron, such as exists in Pepto-Mangan (Gude), cannot be but of benefit, by stimulating the formation of erythrocytes and hemoglobin, and thus augmenting the oxygen-bearing potency of the blood. Metabolic interchange is thus quickened, better absorption and assimilation of food follows, and as a consequence, nutritive repair is encouraged and hastened.

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Mr. Isca represents a number of Eastern publishers, and is prepared to deliver any medical books wanted. He is a courteous agent who desires to serve medical men seeking books or information about books.

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A product that comes from a modern scientific laboratory and receives the unqualified endorsement of modern physicians, must possess a degree of merit sufficient to commend it to the whole profession, and such are the products of Messrs. Sharp & Dohme, to which they refer in their very brief and interesting announcements now appearing in our columns.

MUDCURA SANITARIUM

Within a few miles of the Twin Cities in a ten-acre park overlooking the Minnesota River Valley, is located the Mudcura Sanitarium, conducted by a medical man of unquestioned professional standing, Dr. H. P. Fischer, of Shakopee, assisted by an able house physcian, Dr. G. P. Dempsey.

This sanitarium is a first-class modern hotel with suitable outbuildings and quarters for the administration of sulphur mud baths, whose home is found near the Minnesota River.

The results obtained from this treatment are very remarkable in practically all suitable cases, and complete failure is rare.

If more doctors will send proper cases to this sanitarium even for brief periods of treatment they will find their reward in satisfied patients. In fact it is a good place for many worn-out physicians themselves. Dr. Fischer welcomes all such men.

THE MINNEAPOLIS SANITARIUM

The above-named institution, located at 1500 Elliot Avenue, Minneapolis, is a home sanitarium for mild mental and nervous cases and drug addicts, and is one of the best conducted homes of this character to be found anywhere. Both Mr. and Mrs. J. J. Baker have given it their personal attention for many years, and they have done the public admirable service. Their work during the past four or five years when the servant problem has been unsolvable, has done them great credit and has enhanced the value of the sanitarium to the classes furnishing it patients.

Mr. Baker has done the public another admirable service in the foundation of the Baker-Bartholomew School for Backward and Nervous Children, which opened on September 1, 1920, and has proved to be a decided success, filling a long and urgent demand in the Northwest for such a school.

NUJOL

The evils of constipation are second only to the use of laxatives to cure them. Both evils have been the besetting sin of the American public. Of course we mean the abuse of laxatives, which has been well-nigh universal. The end of the two evils was not in sight until Nujol was put upon the market by the Standard Oil Co. (New Jersey), with sufficient capital and business ability to set forth the value of a mineral oil in the medical treatment of constipation.

Nujol is the product of the scientific laboratory in its preparation to meet the conditions presented in constipation. It is a liquid petrolatum of the exact viscosity demanded by conditions known to the scientific physician and ascertained by elaborate scientific tests. Its continued use is absolutely harmless, as it is merely a lubricant, and it makes possible the complete cure of practically all cases of constipation.

The literature of Nujol can be obtained by writing the Nujol Laboratories of the Standard Oil Co. (New Jersey), New York City.

ANTIPHLOGISTINE

There are some so-called proprietaries that have come into well-nigh universal use among physicians, one of which is Antiphlogistine. Such preparations have come into such extensive use for good reason or good reasons. They accomplish a definite result in a manner far more satisfactory than other products in use before their appearance.

As its name implies, Antiphlogistine reduces an inflammatory process. So did the old-time flax-seed poultice and not a few other medicaments, but when Antiphlogistine was given the profession by professional men, because of its easy application to any part of the body and because of its remarkable results, it "took like wildfire." It has gone on "taking," and is used today in many ways that never before suggested external anti-inflammatory medication.

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Fortunately, Mr. Upshur Smith is now doing such work with Minnesota digitalis. Mr. Smith is a chemist of very high standing in both America and England, and his work in growing, preparing, and standardizing Minnesota digitalis is worthy of commendation and recognition.

An exhibit of Upsher Smith Minnesota grown digitalis will be made at the forthcoming Boston meeting of the A. M. A.

A NEW AND BEAUTIFUL MINNETONKA SANITARIUM AND CONVALESCENT HOME

For years the question has been asked, inside and outside the profession: "Why not a high-class sanitarium near Minnetonka?" The demand has long been urgent, but the man and the money for the undertaking have not met until now, and now the institution has opened, and very auspiciously.

The house itself, recently built by a wealthy merchant for a home, is exquisitely beautiful, inside and out, and contains every modern convenience—gas, electricity, hard and soft water, bath-rooms (shower and tub), hot-water heat, sleeping-porches, etc.

And the forty-acre park in which the house is located is charming. The ground around the house is a slightly raised plateau, sufficient to give a distant view of the country and not high enough to be swept by the wind, which is often very unpleasant. The trees around the house are stately lindens, elms, maple, etc., and there are flowers in abundance.

The property is now in the hands of Dr. A. Bach, a graduate of Heidelberg, a student and friend of Jacobi of New York, and a thoroughly equipped sanitarium man, who has been engaged in this line of work in both America and Europe for many years. The cost of the property, together with equipment and new buildings planned, will not be much less than one hundred thousand dollars.

Dr. Bach has engaged as assistant superintendent, Miss Ruth Bren, a graduate nurse of St. Andrew's Hospital, with further experience in the General and other hospitals.

The plan of work is to have the Sanitarium give its patients, under the direct charge of their own physicians, every care that can be reasonably expected of a high-grade institution. Dr. Bach will have medical supervision, without charge, in the absence of the patient's physician, and Miss Bren will supervise the nursing care of all patients.

The food provided will be the best obtainable for the purpose and will be prepared by a dietitian of recognized ability.

The Sanitarium will be open to the patients of all ethical physicians and will be conducted strictly along ethical lines.

The charges will be $40 a week and upward, with few or no extras except as distinctly agreed upon and required by the individual case.

Physicians are cordially invited to visit the Sanitarium, either with or without telephonic notice of their calling hour.

It is located at Groveland, on the Minnetonka Boulevard. The post-office address is Hopkins, Minn., R. F. D. No. 2, and the telephone is Wayzata 243. Dr. Bach will be glad to meet or hear from physicians.

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The Official Journal of the
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PUBLISHED TWICE A MONTH

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EVOLUTION FROM STATUS THYMICOLYMPHATICUS IN ITS SUCCESSIVE PHASES, AND THEIR TREATMENT*

BY WALTER TIMME, M.D.
New York Neurological Institute
NEW YORK CITY

Medical literature for many years has sporadically produced a variety of glimpses into status thymicolymphaticus, from the viewpoint of the pediatrist, or the internist, or some other specialist who had become interested in the condition because of its bearing in his particular field. Always were warnings uttered as to the importance of its recognition, for always did its presence modify symptomatology, treatment, and prognosis. But never has any real attempt been made to trace the progress of status thymicolymphaticus through the developmental years to adult life and to mark its metamorphosed characteristics and the attempt of the individual to compensate for its disturbances. In the past ten years it has been my fortune to examine many hundred cases of status thymicolymphaticus in all stages of development, including adult cases, in whom the early history gave indubitable evidence of such disturbance; and, as a result of a more or less comprehensive study of these cases, certain general conclusions have been drawn which I shall attempt to present to you, together with the facts upon which they are based.

Reviewing the general symptomatology of status thymicolymphaticus as a basis from which we shall proceed, I give, hurriedly, the outstanding features of this condition.

1. *Skeleton.*—Growth of skeleton is usually abnormal in that the various units are in disproportion,—thorax too long for legs, and vice versa; hands and feet too long for arms and legs; bony structure usually frail, and rachitic evidences are frequently present. A maxillary torus is in evidence.

2. *Teeth.*—Almost invariably there is delay in permanent dentition with prominence in size of the central incisors of the upper jaw, with comparatively small lateral incisors, and canines that have lost, or rather not acquired, the fang-like shape, but resemble the incisors in that they have a cutting edge. The molars appear very late.

3. *Joints.*—The tendons about the joints are loose, and, therefore, dislocations and subluxations are frequent, together with ability to produce marked contortions of the body. The extremities are like flails, and the whole skeleton is of a loosely-put-together character. The apparently fixed joints, such as the sacro-iliac, become partially movable, and, therefore, are the seat of intense backache on fatigue. Like conditions obtain in joints of the foot, and pes planus is the result.

4. *Skin.*—The skin is soft and velvety, covered with lanugo, frequently with a marked blush on the cheeks,—a typical "peaches and cream" complexion. The bluish vessels are easily seen through the translucent skin.

5. *Hair.*—While lanugo covers the parts which would later be provided with secondary hairy growth, yet such later growth is very late in appearance. Axillary hair and pubic hair do

*Presented at Minneapolis Clinic Week, Minneapolis, Minn., April 25, 1921.

not come in until long after the usual time for the arrival of puberty, and in the boy, beard and mustache are still later, and then very sparse. The growth on the head is, however, profuse.

6. *Genital System.*—In the boy there is usually retardation in growth of the genitals, and not only this, but the growth is of undifferentiated character, so that there is a fold of the scrotum, which partially or even entirely surrounds the base of the penis, resembling the labia in the female. Occasionally, one or both testicles are undescended, and there may be hypospadias. In the girl the clitoris is usually disproportionately large, the menses come on late, and are delayed and irregular.

7. *Eyes.*—The pupils are usually large and mobile; the sclera, clear bluish-white; and the vessels of the fundus are extremely thin in caliber, without engorgement of the veins.

8. *Endocrine Glands.*—The *thyroid* shows no abnormalities in size, although it is usually underfunctionating; the *thymus gland* is present and large, even after the twelfth year. Percussion and röntgenography will confirm this. The picture should be made at the end of a long expiration. The *adrenals* are invariably deficient, both as to size and chromaffin content. Indeed, the chromaffin tissues throughout the body are deficient. The *pituitary gland* is usually small and is encased in a sella turcica, which is small and enclosed by the clinoids. This fact is of great importance in the further history. The *gonads* are usually small and delayed in development and in differentiation.

9. *Vasomotor System.*—The blood-vessels are of small caliber throughout the body, especially the aorta and the coronary arteries. The heart is small.

10. *Viscera.*—The viscera frequently show a tendency to splanchnoptosis. Incontinence of urine. Enuresis.

11. *Laboratory Findings.*—Blood: red-blood cells and hemoglobin, usually normal; white cells show a marked relative lymphocytosis with a low polymorphonuclear count, which at times is as low as 5 per cent. Usually an eosinophilia is present; blood sugar is usually low—.080 per cent, .060 per cent. Of importance is the carbon-dioxide tension of the blood plasma, which is invariably low, 45 to 50 per cent. The coagulation time is prolonged, often as long as 15 minutes. The urine has a low specific gravity, and not infrequently shows the presence of acetone.

12. *General Observation.*—From the foregoing, the symptoms exhibited by the patients are readily understood. These are fatigue and dyspnea on exertion; fainting attacks and collapse in critical situations; syncope and death in narcosis, fright and exhaustive demands. The symptoms depend upon the low chromaffin supply, the small blood-vessels, the low blood-sugar, and the tendency to acidosis. Death is not due, as has been thought, to pressure of the thymus on the trachea, or, at any rate, only in the rarest cases, but is due to adrenal exhaustion. Urticaria, asthma, acidosis, enuresis, hay fever, circumscribed edema, arthritides, are all concomitants. Blood-pressures are low, and pulse-pressure frequently down to 10 or 15 mm. The low adrenal efficiency gives a Sergent's line on stroking the skin of the abdomen.

From the general description, no matter what your field of work may be, you will all recognize cases that have come under your notice. These cases do not all die in growth or adolescence, nor does even a large number of them. What becomes of the survivors? How do they manage to maintain themselves in the struggle for existence? Do they constantly remain a prey to their deficiencies? These questions possibly can now be answered. The development and evolution out of status by the individual's intrinsic powers of compensation and adaptability form one of the most interesting chapters in modern medicine, and their recognition will enormously aid us in our power to help hitherto obscure and apparently adventitious symptoms in our patient's progress, no matter what his ailment, no matter what our specialty.

The very first consideration in the difficulty of adaptation to environment of the status case is the outstanding fatigue. This, as has been said, is due to several factors,—the adrenal insufficiency, the low blood-sugar content, the low alkaline reserve, and the low blood- and pulse-pressures. If there were any possibility of overcoming these basic difficulties, a large measure of improvement would take place. But is there in the human economy any possibility of such autonomous regulation? If, for instance, splanchnic stimulation, such as is efficient in shock, were to occur, might the situation not be overcome? The stimulation of the splanchnic or the sympathetic system generally depends for its effect largely upon an adrenalin reserve. This is wanting in the status cases. Stimulation by thyroid secretion also depends upon the sensitization of the neuromuscular synapse by thyroid extract to the action of adrenalin. Again, the same difficulty. But there is one tissue which will pro-

duce the wherewithal, independent of adrenalin, to increase blood-pressure and the blood-sugar content, and that is the pituitary body. Does increasing activity of this gland actually occur? For a reply we must go to our case-histories.

We find here two groups of status cases, one, by far the larger, in which the sella turcica on *x*-ray examination is found to be small and enclosed; and the other in which the sella is presumably normal in size and conformation. The symptomatology in the two cases is different in important particulars, and it is the former group which is of interest to us now. In the *small, enclosed sella* group there is, always associated with the fatigue states, headache. This headache is intratemporal in situation; of intense, painful boring, or pressure, or throbbing in character; and more or less periodic in its onset. Its periodicity is menstrual or seasonal; and yet it may be produced by any factor which will stimulate the pituitary gland. For instance, the ingestion of large quantities of carbohydrate food; cerebral hyperemia due to the intense cerebration of long-continued worry or chagrin or mental effort; injections of anterior lobe pituitary extract; and similar stimulants. Just before the headaches begin, the blood- and pulse-pressure are low in our cases, while during the headache period both rise, as does the blood-sugar content. After a year or two or three of such constantly recurring headaches, interesting data are available. These are as follows: blood-pressure, pulse-pressure and blood-sugar content are all on a higher level; there has been a rapid increase of skeletal growth; and an *x*-ray of the skull shows a sella turcica that presents erosions and thereby an enlargement of its cavity.

With these facts at our disposal, I believe that the conclusion is not very far fetched that pituitary hyperactivity has occurred and with it an amelioration of the asthenic symptoms. In other words, there has been a compensation process inaugurated automatically, which has served to overcome many of the symptoms of disability possessed by the status case. This compensatory process proceeds for years, the sella turcica becoming more and more eroded, the headaches gradually becoming less and less intense and less frequent, the skeletal growth, however, going on apace. Now, other symptoms of pituitary primary activity and other glandular activity secondarily, begin to present themselves. There is gonadal growth; undescended testicles come down, and secondary hairy growth begins. The young man that has reached this period of compensation gives somewhat the following picture: His age is twenty; he is six feet or more in height; his skin, while still smooth and velvety, has begun to look more rugged; the first hairs of mustache or beard are beginning to show themselves; his pubic hair, which has been for a few years scanty and feminine in its distribution, begins to encroach on the middle line of the abdomen towards the umbilicus; his joints are loose, subluxation of the mandible or of the carpometacarpal joints being readily produced; he has the large central incisors of the upper jaw; a "torus palatinus" is evident; but he is getting to be more efficient in his study and in his play, and his fatigue is diminishing. He still has headaches, sometimes very severe. It is for this symptom that he sees the oculist or the rhinologist or the internist or the neurologist. Careful inquiry into his developmental history will elicit many symptoms of the foregoing group, and he will be recognized as being in a transitional stage of compensation from an early status thymicolymphaticus. The rapid skeletal growth and the headaches will lead the careful clinician to examine the sella and the thymic region, and there the telltale marks of his progress will be seen. At once it will be recognized that the extreme height and the headaches are simply the hallmarks of a *purposeful compensatory process* on the part of the pituitary gland to overcome the disabling characteristics of a status thymicolymphaticus, and are not *disease symptoms* in themselves. This is highly important to know both for purposes of treatment and for prognosis. As we watch his progress through the years, he goes on growing, though less and less in degree; his headaches come on only after undue fatigue or exertion; the thymic *x*-ray shadow disappears; he may grow both mustache and beard; his blood-pressure, pulse-pressure, blood-sugar content, coagulation time—all approach normality, and finally even his growth ceases. We have before us a moderate giant, six feet two inches in height, who has finally matured, physically, psychically, and sexually at the thirtieth year of life, instead of at the twenty-first. He will always be conscious of some limitation to his physical possibilities, but will be able to survive in competition with his fellows. In other words, he has gone to cure through spontaneous compensation. Looking back over his career, the recognition of the milestones of his progress gives us the keynote of the treatment which we may accord his less fortunate brethren in their partial or complete failure to follow his

trail. That keynote is the *ability of the pituitary body to become hyperactive* in order to compensate for the initial adrenal insufficiency. It is incumbent upon us, therefore, first to recognize those cases that continue to exhibit various degrees of thymic disturbance in their later life, and, secondly, to estimate the ability of the pituitary to compensate.

1. Adults with subinvolution of the thymus gland. These cases, besides the original structural abnormalities described in the opening, exhibit especially (a) fatigue, (b) low blood- and pulse-pressures, (c) low carbon-dioxide tension of the blood plasma, (d) long coagulation time, (e) various vagotonic stigmata, such as visceroptosis, hypermotility of stomach and intestine, urticaria and angioneurotic edema, cardiospasm, esophagospasm, high gastric acidity, anginoid attacks, attacks of syncope; and so on. These symptoms are important in every field of medicine and play an extremely active part in each symptom complex. The danger lies in considering them as disease pictures in themselves, and not as mere symptoms in a universal syndrome whose basis is a subinvoluted thymus gland, uncompensated. The recognition of combinations of the above intruding themselves into our patient's complaints will make for more thorough diagnoses and more thorough basic rational treatment.

2. Estimation of the pituitary compensatory ability. As we have seen that automatic compensation of a thymic state depends upon potential hyperactivity of the pituitary body, we must estimate this possibility by the only means as yet in our power, namely, the size of the sella turcica and its freedom from complete enclosure. As before stated, the two large groups of our cases are separated on a basis of sella turcica conditions, the small enclosed sella giving rise to the pressure symptoms, with headache, growth, and gradual amelioration of the symptoms *provided the sella becomes eroded and thereby enlarged.*

The *normal sella* group have at most only intratemporal pressure symptoms of a mild degree, but growth has been rapid and blood-pressure, pulse-pressure, and blood-sugar content have gradually risen, and with this rise a general improvement in the asthenia has taken place, and in a comparatively short time our patient is normal and no longer interests us.

Furthermore, with a large, roomy sella from the very beginning, compensation may occur without any symptoms whatever, and the case never come to observation.

There is still another possibility, namely, that the small, enclosed sella will resist enlargement or that the pressure exerted within it is never sufficient to produce such enlargement. In either case an inefficient pituitary activity leaves the patient at the mercy of his thymic subinvolution. At this point our therapy becomes effective.

Having decided then that our case presents the earmarks of an early thymic subinvolution, it is our function next to determine the phase of compensation at which the patient has arrived. An *x*-ray examination of the chest and skull will help. The chest may still give evidence of a persistent thymus gland, although the absence of a thymic shadow is not necessarily proof of the absence of the thymus. The skull, however, will show a sella turcica of one of the following types:

a. Small enclosed, no erosions.

b. Small enclosed, with erosions.

c. Medium size, smooth wall, open between clinoids.

d. Medium size, eroded walls, or clinoids, or both.

e. Enlarged with evidences of extensive erosions.

Type *a* is of the non-compensating group of cases. This group requires constant treatment, probably throughout life.

Type *b* shows beginning compensatory enlargement, judged by the eroded walls of the sella, and will need treatment to assist the compensatory effort.

Type *c* is a normal sella, which may or may not enclose a hyperactive gland, and in which treatment will depend upon the efficiency of the hyperactivity.

Type *d* is of normal size, but has been made so by constant pressure, as witnessed by the marked erosions. In this group of cases there is usually a history of long-continued, severe headache of migrainous character, intratemporal in situation and frequently of ophthalmoplegic type. This ophthalmoplegia depends upon the lateral encroachment of the pituitary body on the cavernous sinus. The sinus conveys the 3d, 4th, 6th, and ophthalmic division of the 5th cranial nerve within its walls, and pressure upon it, of the pituitary body, will involve one or even all of these structures. Hence the symptomatology will include during the headache diplopia, strabismus, ptosis, pupillary abnormalities, and so on. The radiologist will often report such a sella turcica as normal in size, without suggesting

erosion, not recognizing that the normality in size is simply a transitional state from small to large. This is of extreme importance to recognize.

Type *e* is the final state of a sella turcica in cases in which complete compensation may have taken place with giantism, or acromegalic features, but with normal blood-pressures and normal blood-chemistry.

By means of these examinations, together with the patient's symptomatology, we can arrive at some conclusion as to his present whereabouts in the progress to complete compensation. I divide the entire period of evolution into four periods: (1) the actual status of origin; (2) the period of beginning compensation with beginning rapid growth, headaches, and symptoms, both physical and psychical, of an underdeveloped pituitary body; (3) the period of enlargement of the sella turcica with a gradually decreasing fatigue, decreasing headaches, and a slowing down of growth; and (4) the terminal period, in which the condition becomes fully compensated, with cessation of growth and of headache and much moderation of fatigue.

The difficulties arising in each of these stages have been only lightly touched upon in the foregoing; but each period has a host of major and minor attributes that only a long experience will make familiar. I would like to mention here chiefly the mental disturbances with their concomitant anomalies of behavior. During the second and third stages, namely, those of continuing compensation, the individual contending with his headaches and fatigue cannot give proper thought nor consecutive attention to the problems before him. As a result he falls behind his more fortunate brothers in school and college and becomes backward in intellectual development. Realizing his inability to compete with them, he likewise separates himself from their company and their games, and becomes shut in. This leads to various psychic phenomena with morbid thoughts and fears; and a more or less depressive state supervenes. One curious condition which we have often seen in our patients at this stage, in those with small enclosed sellæ turcicæ, is a lack of inhibition, which manifests itself in a variety of ways. They do and say the first thing that their environment impels them to, without allowing judgment to enter until too late. Thus many of our cases are pathological liars, kleptomaniacs, moral inferiors, and drug habitués. They always avoid obstacles by the means nearest at hand, and never by any chance either endeavor to overcome them or to make early provision against them. When compensation is complete, however, or treatment is instituted early enough, many of them are improved in these regards as well as in the matter of their physical disabilities. A certain number of cases never compensate, the sella remains small and enclosed, and their lot is constant observation and treatment.

So that we see in the evolution from status thymicolymphaticus a series of stages involving a symptomatology which encroaches upon all fields of medicine from surgery to psychiatry. The tangential points are the ones that all of us must watch for, and, once found and recognized, are the keystones to a complete understanding of the patient.

Treatment.—A knowledge of the dynamic process going on in our cases and of the goal that the autonomic procedure is striving to attain, is the groundwork of our treatment. To recapitulate: the pituitary must do additional work to increase blood-sugar and blood-pressure, for the adrenals are inefficient. Then the active thymus must be inhibited. The lack of differentiation in structure and gonadial characteristics of the thymus cases may be partially overcome by the administration of small doses of thyroid gland and of iodine. This is based upon recent investigations on the positive effect of thyroid gland and iodine upon differentiation in lower forms of life. The thyroid dosage should be low, one-tenth grain daily; or of thyroxin, Kendall's product, one-half milligram daily or on alternate days only. Iodine, in one- or two-drop doses, well diluted, or in the form of sodium iodide, grains five, on alternate days will suffice. If the thymus remains large, it should be rayed at periodic intervals, depending upon the urgency of the case. But the chief treatment must be directed to increasing the pituitary supply. In those cases in which the sella shows much erosion with gradually increasing efficiency on the part of the patient and a diminution of headache, no treatment at all is indicated. But where the effect of compensation is not apparent, the fatigue and headache persist; then pituitary medication is essential. The correct administration of this product is extremely difficult to outline, for there are certain times when it increases the headache in individuals, and frequently, if continued without intermission, a gradual diminishing effect is seen. Personally, I begin with a one-quarter grain capsule of the whole gland, given once daily on an empty stomach. Frequently, after three or

four days, the patient complains of pressure in the head, intratemporally. I then omit giving it for a day or more, and begin again. In girls it is usually omitted a few days before the menstrual period, for it increases the headache usually present at that time in them. Gradually, with this small dosage, conditions improve. If not, the amount is slowly increased, but given intermittently as before. Rarely do I exceed a daily dosage of three or four grains. The patients, before very long, begin to feel the good effects of this treatment and become expert in their own cases, so that they can tell how much glandular extract to take and when to take it. Stimulants of the sympathetic nervous system are efficient in tiding over especially severe periods of weakness. Coffee, atropine in small doses, alcohol in small doses, are some of these. One might think that suprarenal gland extract or adrenalin would be of good effect. The former sometimes is of service in conjunction with pituitary feeding, but adrenalin usually is not. After ceasing the administration of adrenalin by mouth, the blood-pressure usually falls below its former height. And when given hypodermatically, the reaction is frequently very bad and leads occasionally to syncope. Its effect is much like that of cocaine in these cases,—rapid adrenal exhaustion takes place due to intense stimulation of the splanchnics. Administration of alkalies, —carbonate or bicarbonate of soda several times daily,—is of the greatest service in combating the low alkaline reserve.

Apart from active treatment, it is necessary to enjoin certain measures on our patients. They should *not* subject themselves to (1) exercise, especially of a competitve nature, except in extreme moderation; (2) to cold-water bathing; (3) to excessive ingestion of carbohydrates; (4) to too intense application to any one task for a considerable period; (5) to worry, anger, or emotional strain; (6) to narcosis, especially chloroform, cocaine, or its derivatives.

They should have air, sunshine, and much rest. Food should be taken frequently in moderate quantities. Adjuvants of all kinds will readily suggest themselves in the conduct of any one case and, of course, the special treatment involving any particular organ of little resistance must be carried out.

Note.—Case-histories belonging to the evolutional stages may be found in "A New Pluriglandular Compensatory Syndrome," by Walter Timme, M. D., in *Endocrinology,* July-September, 1918, Volume 2.

LARYNGEAL TUBERCULOSIS*

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It is only within the past few years that laryngeal tuberculosis has begun to be more generally recognized as a disease in which good results may be obtained. The misconception regarding this condition was the result of several different factors. Foremost among these may be mentioned the general lack of knowledge of tuberculosis; the failure to look for and recognize the early lesions of the larynx; and, finally, when such lesions were recognized, failure to sufficiently impress the patient with its seriousness so that the physician in charge was able to carry out the rigid control and supervision necessary.

The proportion of tuberculous patients who develop a laryngeal complication is a question that still admits of considerable variation of opinion. Different students of the subject estimate its occurrence in from 20 to 90 per cent of all pulmonary cases. Dr. Baldwin of Saranac Lake, reports that he found an involvement of the larynx in from 16 to 40 per cent of his cases. Von Ruck reported 58 per cent. Lockard, in his book on "Tuberculosis of the Nose and Throat," gives the average of fourteen reports from different parts of the world as 34.5 per cent. Mullen, of Colorado Springs, in a recent article in the *American Medical Journal,* states that statistics vary all the way from 5 to 85 per cent. He adds that he believes the latter figure to be more nearly correct, and that the discrepancy exists because of the indifference of most sanatoria toward proper laryngeal examinations, and that in the end the diagnosis depends upon the skilled eye of the diagnostician. Personally, I

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feel that it is safe to say that from 40 to 50 per cent of all pulmonary cases have a laryngeal involvement of more or less extent. The disease occurs nearly three times as frequently in men as in women. The explanation of this is based on the ground that, through smoking, inhalation of dust, and occupations in crowded and ill-ventilated places, the male larynx is subject to more strain and irritation. Lent, reporting two hundred and fifty cases of pulmonary tuberculosis in women, found the incidence of laryngeal tuberculosis to be 18 per cent. Laryngeal involvement occurs most frequently between the ages of twenty and forty. It does occur, more rarely, however, in very young children and in those of advanced years.

The chief etiological factors, as already intimated, are irritation, strain of the larynx and lowered general resistance. There are three sources by which the bacilli may reach the seat of the lesion. These are through the blood, the lymph, and the sputum. The two former,—that is, the blood and the lymph,—are now conceded to be the more frequent avenues of infection. These give rise to the deeper infiltration in the submucosa. The development of these deeper infiltrates, by exerting pressure on the superficial layers, causes them to break down and ulcerate. These ulcers have characteristic bases covered by ragged granulations. Infection through the sputum, when it does occur, is found most frequently in advanced cases with abundant expectoration. In these cases the lesion is more superficial, consisting of miliary tubercules, which, as development proceeds, become confluent and form the superficial ulcer without the ragged granulated base.

The question of primary tuberculosis of the larynx is one that has met with a great deal of discussion and difference of opinion. The majority of men who have made a careful study of the problem say that it does not exist or that, if it does, it is very rare. Dr. Baldwin says there is one primary case on record. Lockard questions the existence of any primary case. He says that normal lungs do not mean that the lesion in the larynx is primary, but that before we can say any given case is primary we must exclude the bacillus from the other parts of the body, especially the tonsils and the lymphatics.

Dr. Dworetzky of Otisville, New York, has classified the lesions of the larynx into the acute, the subacute and the chronic. He describes these various forms in part as follows:

"*The acute type* is the least frequent and is characterized by soft edema with a marked tendency to ulceration. It may begin acutely or follow the subacute or chronic type. It may occur at any stage of the pulmonary lesion, but usually in the advanced cases. If the patient is in good general condition it may run its course, become subacute and occasionally arrested, but in general it does not yield to treatment."

"*The subacute type* is characterized by a pseudo-edema of the part or parts of the larynx with a moderate tendency to fibrosis. It usually begins as such, but it may follow the acute or the chronic type. It runs a sub-acute course and is usually benefited by treatment, depending, of course, upon the general condition of the patient."

"*The chronic type* is characterized by a firm infiltration of the part or parts of the larynx, with a marked tendency to fibrosis. The lesion is due to an excessive proliferation of the connective-tissue cells, is usually limited in extent, and may remain so for an indefinite period. With proper attention the prognosis for life and voice is good. This condition in the larynx usually remains secondary to the lung condition."

This classification serves as a very satisfactory guide in handling the different cases. Pathologically the active lesions of the larynx are described in the majority of text-books as consisting primarily of local anemia, which is followed by congestion. The congestion is followed by the infiltrate, and finally the ulcer occurs on the site of the original anemia. I think it is relatively rare that we see the primary anemia and that a slight congestion is more often the initial lesion.

The disease may be overcome at any stage, and when these later stages are present they are either evidence of a rapid development, late recognition, or a failure in the treatment if any has been instituted.

The early subjective symptoms of laryngeal tuberculosis are usually a slight tickling or feeling of fullness in the throat, tendency to hoarseness, voice changes or voice fatigue, perhaps a temporary loss of voice, and a frequent clearing of the throat. Later there is increased secretion, increased fever, pain in the larynx, pain in the ear, dysphagia, and finally dyspnea.

Early subjective symptoms are important, and often they not only serve to call our attention to the possibility of a lesion in the larynx, but they are often the first suggestion of a pulmonary lesion. Yet in this connection we must remember that many cases of fairly well-advanced laryngeal tuberculosis exist without any apparent

subjective symptoms. One writer, after studying a large number of cases, reported that 35.4 per cent of the early cases had no subjective symptoms.

With ulceration of the epiglottis, a marked swelling or ulceration of the posterior commissure, of the arytenoids or of the aryteno-epiglottic folds, there generally appear increased secretion, fever, severe pain, and varying degrees of dysphagia. Dyspnea occurs either as a result of a marked swelling, especially of the aryteno-epiglottic folds, or ventricular bands, or as a result of laryngeal stenosis.

A short time ago a patient entered our sanatorium, having been sent in with a supposedly severe asthma complicating tuberculosis. On observation the dyspnea was practically as marked on inspiration as on expiration. On examination the larynx showed extreme stenosis of a spasmodic type, which was located just at the under surface of the true cords.

The prognosis of this condition has changed markedly in the past few years. Unless complicating a hopeless lung condition, under treatment, the tendency of all early cases is to become clinically well. A few years ago the average length of time allotted to a case of tuberculous laryngitis to live was from two to eight months. Today, I think, the average is more nearly ten years. During the twelve months I spent at Stonywald Sanatorium we had an average of about one hundred women patients, who were practically all classified as early lung cases. About 20 per cent of these had throat lesions, ranging from slight congestion to moderate ulceration. It was my duty to examine and treat these larynges. This I did about three times a week under the supervision of Dr. Lent, the Medical Director, and I do not recall a single case that did not show a marked improvement, the majority becoming clinically well.

With the appearance of late symptoms and signs, since these are most always associated with advanced lung conditions, the outlook is very grave, but some of these cases will make a remarkable improvement.

Inasmuch as about one-third of our early laryngeal cases show no symptoms, the diagnosis of tuberculosis of the larynx depends upon a laryngeal examination, as well as on a familiarity with a normal laryx and its various diseased conditions. In a well-established lung case usually the diagnosis is relatively easy, but even then we will find a number of border-line cases which must be studied and observed for a considerable time before a definite diagnosis can be made. Again, even in well-established lung cases occasionally the larynx will show marked evidence of disease due to something other than tuberculosis or with some other condition complicating the tuberculosis.

As a rule tuberculosis of the larynx does not involve various parts of the structure uniformly. In most cases it is unilateral, or mostly so. About two-thirds of the cases show the more extensive involvement on the side of the more extensive lung involvement.

While reports differ to a slight extent, the areas involved, in order of frequency, usually are posterior commissure, the vocal cords, arytenoid cartilages, ventricular bands, aryteno-epiglottic folds, epiglottis and subglottic space. In other words, the frequency of involvement of the various parts is in most instances directly proportional to their exposure to irritation and functional activity.

We must differentiate from catarrhal laryngitis, syphilis, and malignant and benign growths. Simple catarrhal laryngitis occurs in a large per cent of tuberculous patients. It is generally bilateral and uniform in distribution, while early tuberculous laryngitis usually shows an involvement of some local structure, such as one vocal cord, one ventricular band, or the posterior commissure. Syphilis and tuberculosis may be present at the same time. Here the Wassermann is not absolutely reliable. A few of these cases will show a negative Wassermann, and a few of the cases where tuberculosis exists alone will show varying degrees of a positive Wassermann. In doubtful cases we must then resort to the therapeutic test. The differentiation from new growth is made from a microscopic study of an excised section.

In considering the treatment of laryngeal tuberculosis it should be understood that the occurrence of this condition is an evidence of a general lowered resistance, and makes the outlook, as a whole, more grave. It should be also understood that the primary focus, whether it be in the lungs or elsewhere, should receive all the advantages of the modern method of treatment. The actual treatment of the laryngeal lesion is both preventive and curative. The first step in prophylaxis is careful and frequent examination of the larynx in all cases of tuberculosis. The other principal points in prevention were brought out by Dr. Watson in the Arizona State Medical Journal in 1916, and are, first, control of the cough as far as possible; second, restraint from

all excessive use of the voice; third, the avoidance of smoking and inhalation of all irritants as far as possible; fourth, the correction of any local pathological conditions in the nose, pharynx, and nasopharynx; fifth, keeping the larynx clean.

The curative treatment will depend upon the stage. The acute and subacute cases require careful and regular attention. The chronic may be handled by explaining to the patient his condition and keeping him under periodic observation, while the use of an oil spray will perhaps be all the local treatment necessary.

I feel that the first essential in the curative treatment of any long-drawn-out disease is to endeavor to get the patient in the right mental attitude. If you succeed in this, the second point is to endeavor to so conduct yourself and your treatment as to keep him in that mental attitude. Rest in the treatment of tuberculosis means mental as well as physical rest. We realize that during the active stage of pulmonary tuberculosis, rest, in all its phases, is the one thing which our patients cannot overdo. As important as is rest in the treatment of pulmonary lesions, I feel that in the treatment of laryngeal lesions, especially of the intrinsic type, rest is twice as important if we can conceive such a possibility.

In the treatment of the active tuberculous lesions of the larynx the control of the use of the voice is perhaps 75 per cent of the essential treatment. The reason why so many of our laryngeal cases do not get better results is due, perhaps, to the fact that, while they may be willing faithfully to take the cure for their lung lesion, they are not willing to do the same for their throat lesion. The taking of the cure for tuberculosis is essentially the learning of a new set of habits, mental and physical. The learning of the habits necessary in lung lesions, while by no means an easy task, is apparently much easier than in the case of laryngeal tuberculosis. So many patients seem unwilling to refrain from the use of the voice. Others through forgetfulness or carelessness find it a very hard habit to acquire. The influence of environment is a big factor. The patients for whom it is necessary to be "on silence" when surrounded by other people, whether healthy friends or fellow-patients, who are talking at will, find it an extreme effort not to use their voices. The result is, that most of these patients, at some time during the day, will use their voices enough to keep active the inflammatory condition in the throat regardless of what other measures of treatment may be carried out.

The closer and the more often we can be in contact with our tuberculous patients the more successful can we exert the control necessary in most cases. This is especially true in throat lesions. In the care of laryngeal tuberculosis the ideal condition would be where we could have all our patients under one roof or on the same curing pavilion. Under this condition the patients could be examined and, if necessary, treated daily or at least every other day. This would give the physician an opportunity, not only to watch the effect of the treatment, but by his frequent examination to exert a powerful influence by reassurance in the keeping up the efforts and courage of the patients. Under these conditions the patients, by their mutual sympathy and moral support, would also be a great help to each other.

Detweiler, through his firm belief that tuberculous patients could control or at least suppress the cough for the most part, if properly instructed and impressed, gave prizes to the ones who coughed the least. In the handling of laryngeal tuberculosis where we could have our cases grouped it might be a good idea to offer a similar inducement to keep the order of silence. The amount of restraint to put upon the use of the voice must be decided for each individual case. In the absence of deep infiltration or ulceration, or where the arytenoids, cords, and others parts that are under particular strain during phonation, are not involved, the patient may be allowed to whisper or use the spoken voice to a limited extent. When phonation is permitted its effect must be carefully watched by frequent observation of the larynx. When put on whisper its effect must also be carefully watched, and at the same time the patient must be instructed how to whisper. The whispered voice should be used only when absolutely necessary and with as little effort as possible.

In the carrying out of the local treatment, the throat should be kept clean. This can be accomplished by the use of alkaline sprays, the administration of which may be left to the patient. The cough should be restrained as far as possible, for it is very irritating to the inflamed larynx. For this purpose various oils containing menthol, camphor, wintergreen, or the oil of pine needles, are useful. These oils may be used in the vaporizer, intratracheal droppers, or by direct intratracheal injections. Sluggish lesions, especially ulcers, may be stimulated to heal by the direct application of formalin, lactic acid, or argyrol.

In the more severe cases the irritation or pain may be greatly relieved by insufflation of powders. The most useful of these are orthoform

and anesthesin. Ten per cent of morphine in bismuth may also be used. Cocaine should be reserved to the last because of its depressing effect on the patient.

I have had very little experience in the application of surgery in these conditions. I believe it has a very limited but a very useful field. I think in the past it has been overdone. The electric needle is useful in stimulating or removing indolent areas. In moderately early cases of ulceration of the epiglottis, where the ulcer is located on the free edge and progresses in spite of treatment, complete removal of the epiglottis has given very satisfactory results. In the advanced cases, marked by severe pain and dysphagia, the injection of a few drops of alcohol into the superior laryngeal nerve gives marked relief.

In cases where the lung condition is quiescent the use of the *x*-ray and tuberculin to stimulate the healing is favorably recommended by some. The use of sunlight, by its direct reflection upon the diseased areas by means of the Verba instrument, seems to have especial beneficial results. While we have used this method in our institution to some extent we have not had enough experience to form definite opinions.

Dr. Mills and Dr. Forster, in the *American Review of Tuberculosis,* 1919, however, report very favorable results from its use in a small number of cases at Colorado Springs.

In the more severe cases of dysphagia the taking of food may be aided by the application of the anesthetic powders already mentioned. In these cases the ingestion of fluid is usually more difficult than that of solids or semisolids. Fluids can sometimes be taken more easily by these patients by having them hang the head over the edge of the bed, face down, and drink through a tube or straw. Fluids may also be given through a male catheter, size 8 to 10, which is well oiled and pushed through the nose down into the throat. As a rule, bland, unirritating foods, such as puddings, junket, and porridge, are taken with the least difficulty.

In the handling of these conditions it is well to remember that all treatment may be overdone, as well as underdone, and that whatever we do we must be guided by a careful observation of results.

In conclusion, I believe first that the occurrence of laryngeal tuberculosis is much more common than is ordinarily supposed; secondly, that there is a very definite line of treatment for this condition and that when this treatment is carried out it is relatively very effective, naturally much more so in the earlier cases but good results may be obtained in a surprisingly large proportion of the more advanced cases. Thirdly, I believe that, because of the influence of environment and the opportunity offered for detailed supervision and control of cases in sanatoria, institutional care for our laryngeal patients is very important. Finally, I would like to make a plea for the use of the laryngoscope in the routine examination of all patients, regardless of their complaint. By such use of the laryngoscope, the general practitioner, after a little practice, not only will discover the majority of the cases of laryngeal tuberculosis in the early stage, but also in no small number of patients will have tuberculosis which is concealed somewhere else in the body suggested to him for the first time in the reflection in his mirror.

SPINAL ANESTHESIA IN GENERAL SURGERY

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Since 1906, when Jonnesco, on a visit to America, demonstrated the technic of spinal anesthesia on two cases at the Cook County Hospital, I have employed this method in over 1,000 cases, using at various times stovaine, novocaine, and apothesine. The primary demonstration of the possibility of inducing analgesia by the spinal route was made by J. L. Corning, an American physician whose observations were published in the *New York Medical Journal* in 1885. He did not aim at introducing the solution used (2 per cent cocaine) directly into the canal, but believed that, if it were injected into the veins in the vicinity of the spine, it would be carried into the cord and anesthesia produced. His experiments resulted in the introduction of analgesia of the lower part of the trunk and extremities, and he probably unknowingly reached the canal directly, but failed to recognize that the canal could be reached in this manner, so that the discovery of lumbar

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puncture fell to Quincke, in 1891. Interest in spinal anesthesia was stimulated by Bier and others, who used it extensively for a time, but soon discarded it on account of the high mortality, due to the use of cocaine.

Fourneau and Tuffier, in 1904, introduced stovaine as an agent. This has a marked action on the motor nerves, so that complete relaxation is obtainable, but, as it also affects the respiratory nerves and centers, it is not devoid of danger. Novocaine, in 5 per cent solution, has been used most extensively. Tropococaine is preferred by many and apothesine, which I have used exclusively for the past two years, is in my experience more rapid and prolonged in its action than other agents. The solution used is made by dissolving three grains of apothesine in 3 c.c. of distilled water, and this is sterilized by boiling in a test-tube. To this is added, after boiling, two drops of previously sterilized 1-1000 adrenaline chloride. All or a part of the solution is used according to the condition of the patient and the duration of anesthesia desired. The puncture is made between the last dorsal and the first lumbar vertebrae or between any of the lumbar vertebrae, depending on the height to which it is desired to obtain anesthesia. The solution is placed in a 5 or 10 c.c. glass syringe and the disconnected needle is used first to make the puncture and 3 c.c. of spinal fluid is withdrawn and discarded. The best needle for this purpose is one about 1 mm. in diameter provided with a beveled end and a beveled stylet which fits the needle accurately. Then the syringe containing the solution is slipped into the needle and 3 c.c. more of spinal fluid are drawn into the barrel, thus diluting the solution to approximately 3 or 3.5 per cent, and this whole quantity (6 c.c.) is re-injected into the canal.

The solution is usually injected while the patient is in the sitting posture, but it can be done while recumbent. If low anesthesia only is required the patient is placed on his back with the shoulders and head slightly elevated, but, if anesthesia as high as the level of the diaphragm is desired, the upper half of the body is lowered for about one minute to allow the solution to gravitate upward, and then the body is raised to the level position or even a trifle higher; the head and shoulders are kept well fixed to prevent the solution from gravitating too high up the canal. Analgesia may be nearly complete in three minutes. It may, however, require thirty minutes, and it occasionally fails entirely. Allen says that failure occurs in 9 per cent. This is explained by idiosyncrasy, by losing the canal after withdrawing the first fluid, and by getting blood into the canal, thus interfering with the action of the agent. In my experience there have been three cases in which sufficient analgesia to permit operation failed to appear, and general or local anesthesia had to be resorted to. In two of these the failure could probably be attributed to errors in technic. In the third case, after completion of the operation, which was done under local anesthesia, it was noticed that there was complete paralysis of both motion and sensation in the lower part of the body, and the apparent failure to obtain anesthesia was due only to undue delay on the part of the apothesine in causing loss of sensation. In addition to the analgesia or anesthesia produced, which is seldom complete, as the tactile and muscular senses often persist, though impaired, the drug has other physiological actions. The blood-pressure is lowered, the heart-action is slowed and weakened, and the respiration is deeper and slower. Pallor, sweating, nausea and vomiting, and syncope are produced in greater or less degree. Peristalsis is increased, and distention of the bowel is relieved. The reflexes disappear, and paresis or paralysis is produced. The low blood-pressure is due to paralysis of the vasomotor nerves, which allows the blood to accumulate in the large splanchnic veins, thus slowing the heart action. The respiratory nerves and the respiratory center may also be affected. Death may result from paralysis of the respiratory nerves or center, or from the bulbar vasomotor center, or from filling up of the dilated splanchnic veins.

Besides the physiological action of the drug used, the mechanical conditions of the solution and of the spinal canal influence its action. If the solution is of the same density as the spinal fluid, it remains at the point of introduction and it ascends in the canal if lighter, or descends if heavier. A solution of slightly greater specific gravity than the spinal fluid is generally used, and its ascent or descent is controlled by posture. If introduced below the third and fourth lumbar vertebræ it will descend, whether the patient be sitting or lying on the back, owing to the natural anterior curvature of the spine in this region. If introduced between the third and fourth lumbar vertebræ, or higher, it will ascend, when the body is lowered, to the point of greatest posterior convexity of the dorsal spine, which is about at the fifth or sixth dorsal vertebra. The solution remains for the most part en masse wherever gravity determines. Hemianesthesia can be obtained

by keeping the patient on one side. Some diffusion occurs as manifested by the action often produced on the medullary and bulbar centers.

The indications for using spinal anesthesia are, in general, the contra-indications to the use of general anesthesia, provided the field of operation is below the diaphragm level or even the nipple line. In the Balkan states high spinal anesthesia is the method of choice, stovaine being used with a very low mortality-rate. The shock and collapse attendant upon high injections with the agents and the solution we have used, have deterred most surgeons from its employment for operations above the diaphragm. Contra-indications are the presence of severe shock and hemorrhage, the blood-pressure in such instances being too low to stand a further reduction, and the presence of such lesions as marked emphysema and effusions into the pleura in which respiration is already much embarrassed. The mortality of spinal anesthesia is given as 1 in 200 by some and by others as 1 in 1,800. In my own experience it is less than 1 in 1,000. The only death which occurred in my cases was that of a man 50 years of age with enlarged prostate and vesical calculi, long septic from chronic cystitis and pyelitis with myocardial changes. After-effects are generally mild and transient. Headache, nausea, vomiting, and vertigo are not frequent nor prolonged. Pain in the back and legs is quite common. Retention of the urine is a disagreeable and, sometimes, a prolonged complication.

To one who has made frequent use of spinal analgesia the many objections and contradictory statements found in numerous text-books as to its applicability and efficiency, are not only inexplicable but are, for the most part, not reconcilable with the actual facts. Some state that the addition of adrenalin lessens its effect and increases the danger, but there can be no question, clinically at least, that adrenalin increases the duration of the anesthesia and lessens the after-effects. Improper technic accounts for some of the untoward results; for example, one author says, "Be careful to prevent the escape of any spinal fluid," and this unnecessary precaution probably explains many failures to obtain deep enough analgesia, because the needle, unless well within the dura, may slip and the injected fluid may never enter the canal. An amount of fluid equal to the amount to be injected should be withdrawn, thus avoiding increasing the pressure within the canal. Another maneuver, which greatly increases the rapidity of onset of the analgesia and prolongs its effect, is the admixture of an equal quantity of the spinal fluid with the solution in the syringe before injection of the agent into the canal. This also lessens the incidence of after-effects.

In all cases in which I have had experience where the patient at some previous time had an ether anesthesia, and in several who previously had local anesthesia, the opinion was unanimous that the spinal route was by far the more agreeable and satisfactory to the one most concerned, —the patient. As to the formidable lists of numerous after-effects and permanent disabilities encountered following spinal analgesia which are enumerated in many text-books, I can only state that, outside of headache, which frequently follows simple lumbar puncture, nausea and vomiting, syncope or mild collapse, and urinary retention in a fair percentage of the cases, I am entirely unfamiliar with any of the severe, serious, or prolonged complications mentioned, and I believe them all to be due to the use of cocaine, or to the errors in preparation of the solution or in the technic of its administration. In comparison with local anesthesia by infiltration or nerve-blocking, the spinal method is simpler and surer, less time-consuming, causes less mental strain to both patient and surgeons, and does not obscure the field of operation as does the solution on local infiltration. There is less possibility of infection of the wound, and the area involved is not so painful after completion of the operation. The operations done under spinal anesthesia include all possible varieties on the lower limbs, the genitalia and the rectum. Herniotomy, especially strangulated hernia, and prostatectomy are unusually successful fields for its employment. I have used it satisfactorily in appendectomy, obstruction of the bowel, umbilical hernia, gall-bladder surgery, and nephrectomy, as well as in one Cesarean section in eclampsia.

DISCUSSION

Dr. Arthur F. Bratrud (Minneapolis, Minn.): In regard to spinal analgesia there is one thing certain: If a surgeon is going to do this work, he must be familiar with and pay close attention to details, or else he will have a certain percentage of deaths and failures. I have had no experience in spinal analgesia. The death-rate from spinal analgesia is higher than generally supposed. Most text-books give the death-rate as 1 in 500, while one author gives it as 1 in 3,000. There are as yet no statistics available of the death-rate under local anesthesia. Recent statistics compiled give the mortality-rate from all general anesthesias as 1 in 700. Very few surgeons will accept this figure for, undoubtedly, the mortality under general anesthesia is much lower than this. It is not the well-organized clinics with trained anesthetists that have a high death-

rate, but it is the hospitals and districts where neither trained anesthetists nor means to determine cardiac reserve or advanced pathological changes are available. The estimate I have quoted was made in a series of over 10,000 cases collected by Salzer and Stewart of Cincinnati.

There are certain indications for the use of spinal analgesia. Mixter states that under spinal analgesia he has lowered his mortality-rate in acute intestinal obstruction from 46 to 26 per cent. Everybody knows that the death-rate in acute intestinal obstruction is high. Mixter attributes his results to one factor: that we get paralysis of some of the inhibitory fibers of the intestine, but do not get paralysis of the motor fibers. This probably accounts in large measure for the fact that the death-rate in these cases is lower under spinal analgesia than under general anesthesia. Immediately, even before the patient leaves the table, there is passage of gas, flatus, and toxic secretions which have formed above the obstruction. It is this toxic secretion that causes the high mortality-rate in these cases. In all cases of nephritis there is retention of salts in the blood, and in diabetes, of blood sugar. Under ether the retention of salts in the blood is increased 4 to 17 per cent, according to duration of the anesthesia. Under chloroform the retention of salts is not increased quite so much. Blood sugar is increased correspondingly under the use of the two general anesthetics mentioned, but under spinal analgesia or local anesthesia it is increased the least of all. Gas-oxygen comes next to spinal analgesia and local anesthesia.

I have had no experience with apothesine. I have always been successful in getting all the novocaine I needed, but have had no trouble in producing immediate anesthesia by local infiltration or nerve-blocking. It takes a little longer to get a good anesthesia under nerve-blocking than under the local infiltration method. Though a number of bad results have occurred from regional anesthesia, I have never seen a bad result.

I must disagree with Dr. Thompson in regard to abdominal pressure. I think that with proper local anesthesia in abdominal work we get just as much negative abdominal pressure as under spinal analgesia. It is extremely rare to get this under gas-oxygen anesthesia. In case the bowels do not drop back from the edges of the abdominal incision in any form of local anesthesia, it is an absolute contra-indication to proceed under local anesthesia. That patient should be given gas-oxygen or ether anesthesia, provided a negative abdominal pressure does not result when vertical retraction of the abdominal wall is made. As to the time element, I do not know as it makes much difference. In operating under local anesthesia I never wait at all, just do the one blocking—block all the walls of the abdomen where working and proceed with the operation. It is not necessary to make more than one painful prick in producing any form of local anesthesia. We can infiltrate underneath the skin painlessly, and make our initial wheal with a small needle, which is almost painless, then use a long needle. We do not have to produce the white wheals. There are certain parts of the body where we will have more or less pain in making the injection. One place particularly is the fold of Douglas, slightly below the umbilicus. We cannot infiltrate this area with any form of anesthesia without producing some pain; however, little or no complaint is made if injection is done slowly as the needle advances.

In the lower abdomen I prefer caudal anesthesia associated with local infiltration. For instance, in doing cystoscopy in some forms of irritable bladder, it is almost impossible to accomplish this even under general anesthesia on account of the spasmodic contraction of the bladder. Under caudal anesthesia we can produce complete paralysis of the bladder, so that there is no spasmodic contractile power left, and I think the same condition results with spinal analgesia. I think failures in caudal anesthesia alone are about ten per cent, but this percentage will be decreased as we become more proficient with the injection of the solution into the sacral canal.

Cases satisfactorily operated on under local anesthesia have very little or no vomiting. Post-operative vomiting in local anesthesia cases often will result from the administration of narcotics. Any abdominal case will have nausea and vomiting if the mesentery has been pulled upon without first injecting it.

I would like to ask Dr. Thompson if he takes the specific gravity of his different anesthetic solutions.

Dr. Arthur N. Collins (Duluth, Minn.): I would like to ask Dr. Thompson whether or not he obtains anesthesia at all if the solution is injected outside the dura mater.

Dr. Karl W. Doege (Marshfield, Wis.): I have had no experience with spinal analgesia, but have done considerable local anesthesia work in connection with goiters and hernias. I disagree with the essayist, so far as goiters are concerned, when he states that the patients are made uncomfortable under local anesthesia. That may be the case when one begins to do this work. After one has accomplished the proper technic I have not seen any trouble. In goiter work I have used nothing but local anesthesia for over a year, and I am so thoroughly convinced that it is the better method of producing anesthesia in these cases that I do not see any reason why I should change to something else.

Furthermore, in using local anesthesia in herniotomy I do not employ the method of injecting the area that is to be operated upon, but block the nerves; therefore, the tissues are not infiltrated, and the harm Dr. Thompson mentioned in that respect is, of course, not done. I use novocaine in 0.5 per cent solution. In abdominal work I have not done much with local anesthesia except in one case where I did a resection of the stomach under local anesthesia by the method of Kavis, who injects about 90 c.c. of 0.5 per cent of novocaine through an abdominal incision around the celiac axis. He introduces the finger through the wound and finds the spine; then he extends his needle along the finger to the spine until he feels the grating of bony tissue against the needle; then he injects. The supposition is that the solution is introduced subserously, behind the peritoneum. The 90 or 120 c.c. of the solution infiltrates to both sides of the spine and produces an anesthesia, taking in all the sympathetic nerves as well as the spinal nerves. This has enabled me to do a stomach resection for gastric ulcer. I have since had no occasion to use the method described, but it certainly would seem as though it might be tried again if necessity required the measure.

Dr. Thompson (closing): Referring to Dr. Bratrud's remark in regard to the inadvisability of using this

method unless experienced, the same thing applies to anything else. There is an objection to spinal analgesia in certain hospitals where the internes shift too often. This is true also if one has an assistant who remains for two or three months and then, after he has just about learned the correct procedure, makes a change of location, when it becomes necessary to train a new man. That is one reason why spinal analgesia is not used more than it is.

Someone asked me if I used the method exclusively. "No," I replied. "Why?" "Well," I answered, "it is so much easier to telephone that you are going to be up in the operating-room and to start the anesthetic; then when you get there the patient is asleep."

In regard to local anesthesia; I did not mean that the symptoms referred to occurred in all cases of goiter operated on under local anesthesia. I have been told that even Kocher had a good deal of trouble with some of his patients when he first started to operate under local anesthesia. I have frequently done work under local, and in most cases objections by the patient were made when I started to operate. I meant to say that we will get more objections with local than with spinal. Goiters are very successfully done with proper technic under local anesthesia.

In regard to nerve-blocking for hernia: Do you block the inguinal and hypogastric nerves immediately?

Dr. Dodge: When we start out, yes.

Dr. Thompson: That is a fine technic when it can be accomplished. The nerves do not always come through in exactly the same place. The only successful nerve-blocking is where we infiltrate the area first, and then indirectly block the nerve. The genitocrural nerve is one of the hardest things to control even under local anesthesia. I have even had trouble when I cut down and found it; and in spite of all infiltration and nerve-blocking there has been pain.

I had some tests made of the spinal fluid and of the various solutions as to the specific gravity. The sugar of milk is used in apothesine, as it has slightly higher specific gravity. In stovaine, glucose is used to increase the specific gravity.

Answering Dr. Collins' question as to whether or not anesthesia is produced by infiltration outside the dura, I wish to say that some is carried in and some leaks out. One trouble in making lumbar puncture, with headache developing, is explained in this way: When making lumbar puncture it is like pushing a nail through the plantar fascia. We push the flap in, the flap does not close, and liquor spinalis leaks out.

As to posture in the treatment of syncope: When we have given the dose, if it is going to kill the patient, he is dead and that is all there is to it. With chloroform we can institute artificial respiration and try to revive the patient, but this cannot be done in spinal analgesia. If syncope or collapse is apparent, or develops later, we cannot overcome it; there is nothing to do but wait. The head cannot be lowered.

STANDARDIZATION OF PERSONAL INJURY REPORTS*

John E. Palmer, General Attorney, Soo Line
MINNEAPOLIS, MINN.

Mr. Chairman, Gentlemen of the Soo Railway Surgical Association:

A lawyer who would come before a bunch of doctors like this must realize his inability either to instruct or to entertain. To attempt to do so would put one in about the situation the Irishman was in when he was examined for admission to the bar. Over in England a certain Patrick Casey, a large, muscular fellow who was wanted not so much for his legal knowledge as for his brawn, was to be examined for admission to the bar. The judge appointed to examine him was himself Irish and understood the situation; so, when the time of examination came, he said, "Patrick Casey, stand up." Patrick stood up and raised his big brawny arm. "Patrick Casey, what do you know about the law?" "Not a blamed thing," said Pat. The judge turned to the clerk of the court and said, "Mr. Clerk, certify that Patrick Casey has this day been examined by the court touching his knowledge of the law and that he has answered every question put to him promptly and correctly."

It is a privilege, however, to talk to an assemblage of doctors. I have always thought a doctor a wonderful fellow. As I sat listening to the learned address by Dr. Quain, I thanked my lucky stars that when I was raised on the farm and had to get kicked, it was by a cow and not by a horse. I got it in the "tummy" though, instead of in the jejunum. But, let me ask, doctor, if the kick of a horse would bring about all the dreadful things you describe in those big words, for Heaven's sake, what would the kick of a mule do?

You know, I have always wondered about doctors. When a little fellow I wondered where in creation they stacked up all the babies they brought around and left at people's houses, and since I have been in the practice of the law I have wondered where they get all the great big words they use. However, the doctors are all right. I said to a friend of mine one time: "Isn't a doctor a wonderful fellow? Just think what he does and what he means to all of us!" "Why," I went on, "the doctor is with us when we come into this

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world; he is with us when we go out of it." "Yes," replied my friend, "and, darn him, he lends a helping hand on each occasion."

I heard a good one the other day about a professor who was rather absentminded. He was sitting in his library studying away, and downstairs came the nurse, who said, "Oh, Professor, there is a little stranger upstairs!" "What, stranger, where did he come from?" "Why, don't you understand? It is a little boy!" "Huh! Little boy, eh! Well, ask him what he wants."

If I were to undertake to tell you gentlemen anything about your business it would be very presumptuous. I have only this to say: I have been in this railroad "game," as we call it, only about eight months for the Soo Line. Before that I was with the State as assistant attorney general. But I have learned this: While we used to have a pretty good system in the State legal department, I find system developed as nearly to perfection as it can be with the railroad. And that system, every part of it, means something and is essential, otherwise they would not have it. I have learned to get into that system and try to become a part of it. And a very important part is the medical and surgical department to which you belong. In the course of a year Dr. Rishmiller has some three thousand cases pass through his office, as chief surgeon, and you can appreciate the importance of his keeping a systematic record of every case and every item that comes through. It is his business to see that a full record is kept. But, if he is furnished with only sufficient material to keep half a record or a quarter of a record, you can understand the situation in which he is placed. When I receive a report of a case and begin to examine it to see what is, or was, the matter with the patient, I am oftentimes grievously disappointed. Frequently, I am reminded of the time when I undertook to cross-examine a doctor. And, by the way, in the matter of cross-examining a doctor one would give about the same advice that is usually given to the individual about to get married: Don't. But I undertook to cross-eramine this doctor, who was a neurologist. I said to him, "Now, Doctor, you don't pretend to know a great deal about surgery, do you?" "Why, no, I don't specialize in it." "Well," I insisted, "you are a neurologist, are you not?" "Yes." "A neurologist, pure and simple?" "Well," the doctor replied, "I am moderately pure and altogether simple." We sometimes feel that some of the Soo Line surgeons may be moderately pure, but are altogether simple about filling out blanks and keeping complete records. A friend had had a great deal of trouble with his matrimonial affairs. He had been married, divorced, married over again and divorced, and happened to be living single at the particular time when he took an examination for some life insurance. On the blank this question appeared: "Married, single, or divorced?" Well, he scratched his head and thought about it for a while; then filled the blank—he wrote down "Yes." So we ask you to be just as careful as he was about filling out all the blanks.

This is one thing we would like all Soo Line surgeons to understand: When the company incorporates in their blanks certain questions to be answered, they do not do that to contribute to the general prosperity of the printer or paper manufacturer. They want the questions answered or they would not put them there. If I should come into the office of one of you and ask some question pertaining to your profession, and you turned around to your desk and never looked up or answered me, you would not expect me to make a very strong recommendation for your courtesy, nor for keeping you on the staff. Now, these blanks are practically asking you a question, and asking it because we want it answered. The filling out of the blanks, particularly on the surgical report, is of great value when we go over the case and give an opinion on liability or pass on amount of settlement.

Then, again, take the statement of the patient —we always want to know what *he* says about it. Be just as scrupulous about filling out those blanks as a certain bridge foreman was. While repairing a bridge a workman fell off the bridge and down into the stream below, and was fished out by his fellow workmen. In making report of the accident the foreman filled out all the blanks, and where it was asked, "What did the injured man say when first rescued?" he had written this down: "He said it was a dam good thing he could swim." So fill them all out. We may not always be able to get the statement in because of the objection of the lawyer on the other side, and he may use words in our vernacular just as long and difficult as Dr. Quain used in his paper; nevertheless, we see what the man has said about it while it is fresh in his mind and before some "expert" manufacturer of testimony tells him what to say.

The obtaining of a full surgical report is of value in many ways: First, to the patient himself in giving a complete history of his case and thereby insuring proper treatment. Secondly, to

the local surgeon, for he may then have the benefit of the chief surgeon's suggestions. Dr. Rishmiller does not know everything, but he has had some experience or he would not be where he is, and with a full report he may be able to offer valuable suggestions, not only to the local surgeon, but later to the patient himself, and to the claim department. Thirdly, in order that there may be in existence a complete history of each case. So put it all down; fill the blanks. We cannot have standardization of these personal injury reports until our surgeons learn that they are expected to go ahead and fill them out uniformly and completely. This takes a little time, but it is a great thing to put it down at the time, and that is the very thing that makes it of value in the future. Again, in case of a suit for malpractice such a report is of the highest value to the surgeon, for, as you know, if the plaintiff is dishonest and anxious to get money he will say almost anything. If you have a full daily record of the case and the patient swears that you did not call on him for four weeks, this daily record will be well-nigh conclusive in exposing the falsehood. Therefore, it is of great value to the company, and a wonderfully important thing for the doctor himself.

You must also be very careful about some other things nowadays. Recently one of our doctors was awfully, awfully careless in treating a patient. The man was a Swede and had sprained his back in throwing a switch or something of the kind; the doctor rubbed alcohol on his back, and now we have a death case on our hands, for the poor fellow broke his neck trying to lick the alcohol off his back. You have to be careful about such things now.

Another thing, when you come to the most important part along towards the end, after you have made your full report, send in your record of the patient's discharge or leaving the hospital. We always want to know what condition the man was in when he left the hospital. Then you have the unmixed joy of making out your bill and sending that in. If you have it all down, when we come to pass on the bill, it makes all the difference in the world whether you have furnished a full record. I think the doctor has a right to put it all down and charge for it, but, if he hasn't it down, how do we know just what he is charging for?

It certainly is a wonderful help to the fellows down here at headquarters who have to make a record of all these things, to have from the surgeons of the company full information regarding every case. You say it is "red tape"; that is true enough, it is red tape, but when you get into the trial of a lawsuit and have some vital questions before you, it is a great relief to reach out and grasp some red tape, and frequently it is a report. Red tape may be just the thing that holds the case from going on the rocks.

I have looked around the room here to see if I couldn't find a doctor I could tell a story on. Dr. Lyman here reminds me of a good doctor story. In our own town we had a doctor about seven feet tall and very thin, and I had an office right across the street from him. A stairway came down at the rear of the building in which he had his office, and he had a mounted skeleton put away in the closet of his office. One very warm day he was playing checkers with the dentist across the hall, and a boy of eleven or twelve years moseyed up to see the doctor, and in looking for him happened to see the closet door, yanked it open, and the skeleton, mounted and moving on wheels, came right out into his face, and he came down the back stairs yelling loudly with fright. Just then the doctor came back, looked down below, saw the boy, and called to him saying: "Hold on, son, hold on; what do you want?" The boy looked up at him and yelled: "Not much, you don't get me up there again if you haven't got your clothes on!" When we come to make out reports let's all have our clothes on properly, including a thinking-cap, and get everything down.

But in looking over this gathering of men I know that you are all in earnest, all anxious to minister to your fellows as a true doctor should. I think of the work you are doing for humanity when you deal with these poor, smashed-up, broken lumps of clay, as some of them seem to be. Yet, as shown by Dr. Quain in his report, you give these patients the same attention you would render to the greatest. The company wants you to realize that each and every one of these servants of the road has an immortal soul which may be just as valuable in the sight of God as that of the President of the United States. We want you to, and you will, give them the same skillful treatment and painstaking care that you would give the highest officials of the road. I honor the doctor because I know he takes that conscientious interest in his case. In your work you get closer to humanity than we do. In the law business we do not see all sides, we do not see real human nature, we do not have a chance to extend the same friendly helping hand that the doctor does. I realize that. I would rather

my boy would be a doctor than a lawyer because, as a doctor, he would be doing something constructive, above all if he specializes in surgery. Those are not cases where somebody simply thinks something is the matter with the patient when there isn't, and he allows someone to take his money away from him for a promised cure. Your cases are where real injury occurs, the genuine cry for help is heard, and you extend skillful care to the alleviation of actual suffering. It is a wonderful work, and I know you do it well and conscientiously, and the company appreciates it.

I think of the doctors from the smaller towns, who, perhaps, sometimes become discouraged and feel that the fellows in the city have all the good times and the easy time. But do not think that. You men in the country are the ones who ride in automobiles and have the good times socially, as well as every other way. I suppose you sometimes get discouraged and think you ought to be located in the city. You meet with your ups and downs: lose patients, some of your operations are not successful, and you perhaps are blamed for it, you do not all get to be president of the association, you do not all achieve fame in your line, and all that. But I want to tell you, men, that after all the work you are doing right straight along every day in extending your ministrations to these common men, patching them up, putting them on their feet again, restoring them to their families and sending them back to work, is the real thing that counts and that gives you real satisfaction. In this connection I am reminded of the old poem which gives very good advice to young people and very good advice to us all:

Not every bud becomes the perfect flower,
Not every bird sings sweetly as the lark,
And the swift arrow, shot with certain power,
May cleave the air and fail to reach the mark.
So, we must struggle on and never be
Dismayed, disheartened, though ambition crossed;
Our work, wrought out in patience, silently,
Is worth to every one whate'er it cost.

BOOK NOTICES

PSYCHOPATHOLOGY. By Edward J. Kempf, M. D., Clinical Psychiatrist to St. Elizabeth Hospital, Washington, D. C. St. Louis: C. V. Mosby Co., 1920, price, $9.50.

This book of 762 pages is made up largely of a clinical study of cases seen at the Government Hospital for the Insane, in Washington, D. C. An excellent introduction emphasizes the importance of a careful investigation of abnormal thoughts and actions, with their causes, as seen in the insane; gives a brief historical outline of the development of the study of the personality; and summarizes the problems considered in the different chapters.

Chapter I is devoted to a discussion of the physiological nature of the emotions and to the mechanism whereby they come to need certain environmental conditions.

Chapter II is entitled the "Psychology of the Family," and deals with the influence of the members of the family, particularly the mother and the father, upon the autonomic cravings of the infant and child.

Chapters III and IV deal with the struggle to fulfill the biological career in spite of functional and organic inferiority and the mechanism by which compensation is secured; or, this failing, an anxiety neurosis develops.

The Kraepelinian classification of psychoses is discarded as forced, and in its place Chapter V gives a "Mechanistic Classification of Neuroses and Psychoses, produced by Distortion of Autonomic-Affective Functions." This classification is altogether too elaborate to appear in a review, but is based primarily on a division of cases into benign and pernicious. If the ego becomes adapted to the pathological cravings and accepts them as a part of the personality, we have a benign case, which may recover. If, on the other hand, the sexual cravings are disowned by the ego, we have the pernicious type, with a much less favorable prognosis.

Chapters VI and VII deal with anxiety or suppression neuroses and with repression neuroses. In the former chapter is given a very full study of Darwin's neurosis, which is attributed to his complete subjection to his father, whereby he deprived himself of all channels of self-assertion.

Chapters VIII to XII are devoted to the psychoses or disassociation neuroses. A discussion of the factors that determine the nature of the psychosis and its progress makes up Chapter XIV. Chapter XV covers prophylactic measures and the essential principles of psychotherapy.

The book is abundantly illustrated with reproductions of paintings and of sculptures, showing, or alleging to show, persistence of sex symbolism in modern as well as ancient art. While it is doubtless true that certain sculptural forms had their origin in an attempt to represent the sex function symbolically or otherwise, yet it is certainly true that neither all of sculpture nor of painting is based on this feature.

Sex, as we all unhesitatingly admit, is a tremendously important factor in nature, but occasionally one can look at, read about, think about, and admire other things. Some of the authors' interpretations of works of art appear to the average mind far fetched and even objectionable, and it would be interesting to know what their creators would think of the present author's interpretation of them.

The book is also abundantly supplied with elaborately worked out clinical cases, all tending to show the importance of the sexual conflict, and a failure of adjustment of this conflict is given as the cause of practically all the abnormal mental situations in the cases quoted.

A. S. HAMILTON, M. D.

THE
JOURNAL-LANCET
Represents the Medical Profession of
Minnesota, North Dakota, South Dakota and Montana
The Official Journal of the
North Dakota and South Dakota State Medical Associations

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THE PHYSICIAN AS BARTENDER

Evidently it is the intention of the Government, as well as of the people, to "pass the buck," as it is commonly known among our celebrated slangers. The Volstead Act, which covered the country with the prohibition blanket, has been tilted many times, and there is an effort on the part of the Government to make the act even more drastic than it is now. And the Government officials openly state that if the distribution of liquor is left to the medical profession there will be very few mistakes made. History, however, does not bear out this statement. It is shown that an enormous number of medical men have suddenly risen to fame and wealth from the number of prescriptions they have written. One man out West was reported as being very much peeved when he was called to attend a sick woman while busy writing a prescription for a bottle of whisky to be brought over from Canada to the United States. It is rather sad to interrupt such a competent physician as this with such trivial matters as bellyache, sore throat, and a few fractures. Yet there are doubtless many of the medical profession who have acquired writer's cramp in their haste to write prescriptions for liquor. It has been found, too, that in a recent ruling issued by the Secretary of the Treasury, physicians are permitted to prescribe large quantities of beer and wine. This, of course, intensifies the already tense situation and makes the law a little more ineffectual.

As a rule, physicians are reasonably conscientious and honest in the use of their permits, but, unfortunately, when one has been found lacking in decency and modesty and things of that sort, he drags down the whole profession with him. There is some truth in the statement that beer or wine may be more or less medicinal, although it is vehemently denied by many. It is admitted, however, that there are very few occasions on which beer or wine is an actual medical necessity, but occasionally either may be. Every physician, perhaps, will recall cases of catarrhal jaundice, in which nausea and vomiting have been conspicuous symptoms, that have been relieved by the administration of beer, not continuously, but given in ordinary doses two or three times. And many cases are recorded where such an illness has been promptly relieved by a glass of beer. The writer saw a case the other day in which the patient had a myocardial disorder with auricular fibrillations. The patient was nauseated and vomited constantly, and was relieved by one or two glasses of beer.

However, this is no tirade against prohibition. It is an effort to classify the physicians among the men who are endeavoring to do their work conscientiously and seriously and without any effort to evade the law as it is at the present time. It does not apologize in any way for those among the medical men who are virtually professional prescription bartenders. That sort of thing will, presumably, die out, unless it be that the new methods of distilling intoxicating, poisoning drinks is going to overwhelm the country. There has been much evidence that the home brew, the moonshine, and whatever else they may call it, has been the source of much illness, first, because the distilled liquor made from various ingredients evidently contains, at times, fusel oil that is almost deadly in its toxic effects. Yet people are trying it and experimenting with it, and giving it to their friends. They are occasionally very much shocked to find that someone has either gone blind or crazy from drinking the stuff.

Now congress has proposed to reduce the number of revenue officers, and it finds, much to its chagrin, that many of its revenue officers have been profiting by the issuing of permits. It makes one wonder whether these laws are formed from impulses, or whether there is an honest endeavor without much thought of the different problems in the situation—in short, whether it is really worth while. It seems to the writer that Government regulation founded on a reasonable basis is much safer and will work

out more satisfactorily than any of these "reforms" which are suddenly and imperatively thrust upon communities. Every man is more or less of a snarling animal, and if he is thwarted in what he thinks is his "divine right" he is going to snarl a little louder and make it as unpleasant for his neighbor as he possibly can.

THE STATE AND ITS MEDICAL-PRACTICE ACT

It is quite evident that in the let-down in power and control of the various state functioning bodies, medicine must be made to suffer with other professional activities. There seems to be a general inclination to do something bizarre or commonplace, or definitely retrogressive, rather than make an effort toward advanced construction. This is shown in the political situation of today, that is, in state and local politics. The people are uneasy and restless. They want to turn things upside down and inside out, and in so doing they think they are accomplishing a definite purpose. So it is in some of the states with state medicine.

The Minnesota State Medical Association has suggested that they wish to undertake a study and review of the medical laws of all the states, presumably with the avowed intention of improving the medical-practice act. The writer is perhaps not in a position to suggest how this can be done, for he is of the opinion that it cannot be done. Minnesota has stood for years as the fountainhead of medical-practice laws, and its law has been copied by many other states, even those of the East, which states are very slow to be convinced. However, it may do some good to study the laws of forty-eight states in order to see how they differ. The secretary of the Minnesota State Association has suggested that this be taken up by the Delegates themselves, but this applies mainly to the larger societies, both county and district, and the affiliated societies. Knowing that it is very hard to get doctors together, and to work together on a proposition of this kind, the House of Delegates must instruct its committee, if it has one, how to proceed, and why.

So far, we have not made very much progress in educating the lay mind. So many of the laymen are wedded to cults and new things in alleged schools that medicine, properly speaking, has fallen into the discard so far as the average layman and legislator are concerned. This does not mean to imply, however, that we have no friends in legislative bodies; we certainly had in Minnesota this past year, for some of them came to the rescue of the medical-practice act and saved the state from the invasion of the society of quarter-way medicine. It is quite necessary, however, that every man in the State Association be alive to the possibilities of his own and his Association's overthrow. Not very long ago in the state of Michigan an attempt was made to introduce a chiropractors' bill. It was all done very quietly, with the consent of the governor, who evidently had promised the chiropractors recognition. Then, when it came up before a board of voters it was turned down, only to be revived again in the last day's session. The secretary of the State Board of Health in Michigan got into communication with every health man in the various societies, and each one sent in a telegram of protest against the passage of the chiropractors' bill; the day was won, and the chiropractors lost out.

Then, too, in Missouri they have had their own trouble. A bill was passed in the legislature which struck out of the medical practice act the word "reputable," as related to medical colleges, and substituted the words "legally chartered." The governor, being a kind-hearted man, and evidently not knowing much about the medical-practice act of any state, signed the measure, and in doing so he took away from the State Board of Health of Missouri its performance of important functions—one of which is the protection of the public against incompetent practitioners of the healing art. It means that all the old "diploma mills" that used to be alive have been very much revived, as they all had been previously chartered. Anyone can get a charter for a school, college, or university, and anyone can graduate and receive a so-called diploma. This means that the state of Missouri will be among the unfortunate states that have to do with the establishment of medical schools of a reputable type.

These two illustrations show the insidious way in which the opposition is acting. And it shows, also, that the people are becoming very indifferent to the changes which will fall heavily upon them. They do not know it yet, but the time is coming when they will wonder why things are as they are, and they will have themselves to blame, because they lack interest. The world is bound to have a fit, and it might as well come one time as another.

The month of June will bring out and prob-

ably settle many of the problems which are facing the country to-day. This covers not only the political field, but the industrial and trade measures as well. The remedy is what has been found effective in most chronic diseases,—rest, time, and an artificial brace.

THE PRESENT-DAY SHOE ORTHOPEDIST

After visiting the various department stores and large shoe stores of a city, the public must be familiar with the word "orthopedic." The average individual knows, at least, that it refers to his feet, because when in a shoe store, he is met, as a rule, by a sign over the shoe department which announces that it is an orthopedic shoe department. It must be illuminating to the surgeon and orthopedist to find that in department stores and other stores where shoes are sold some suave gentleman is ready to receive his customer, and, with or without his consent, to examine his feet, declare that the main arch is faulty, or, what is now most fashionable, the arch of the ball of the foot has fallen. In order to remedy this extremely grave defect, this self-styled orthopedist or shoe man suggests a course of massage and joint movements, which he can give (at so much per treatment, usually three or four dollars). A course of treatment consisting of twelve seances will increase the price of shoes about thirty-six dollars a pair, the price of the shoes to be added to this merely nominal charge of the orthopedist. And what is curious, and yet not curious when you consider the state of mind of the people, is that they fall for it. One often wonders whether Briggs will draw a cartoon asking and illustrating "What does the orthopedist think about it?"

NEWS ITEMS

Dr. C. L. Roholt has moved from South Haven to Waverly.

Dr. H. G. Henricksen has moved from New Market to Lakeville.

Dr. A. W. Lee, of Fergus Falls, has gone to Chicago to do postgraduate work.

Dr. F. W. Schecher, of St. Bonifacius, has returned from an extended trip in Europe.

Dr. S. Sprecher, who spent the winter in the South, has resumed his practice at Tripp, S. D.

Dr. A. E. Meyerding, of St. Paul, was married last week to Miss Eugenie M. Villaume, of the same city.

Dr. C. O. Hertzman, of Ashland, Wis., is in Chicago doing postgraduate work in urology.

Dr. J. L. Mulder, who has been practicing temporarily at Chaska, has located at Cavalier, N. D.

Dr. Jay Y. McKenna, of Austin, was married last month in Minneapolis to a Minneapolis lady.

Winona County has joined Wabasha County in the management of the Buena Vista Tuberculosis Sanatorium, located at Wabasha.

The new school for tuberculous children at Lymanhurst Hospital, Minneapolis, is to have 100 or more cots for the use of the children.

The commissioners of McHenry County, N. D., have appointed Dr. O. S. Craig, of Towner, and Dr. G. H. Coffin, of Drake, county physicians.

As our pages close for the press the State Associations of North and South Dakota are holding their annual meetings, in Aberdeen and Fargo, respectively.

Duluth's city venereal clinic will hereafter demand a fee, ranging from 50 cents to $1.50, from all patients. The loss of national aid makes this charge imperative.

The program committee of the Minnesota State Medical Association is urgently seeking papers for the annual meeting to be held at Duluth on August 25th and 26th.

Dr. W. T. Stone, who has practiced in Herman and Park Rapids for a number of years, has retired from practice and will become an "agriculturist" in Hubbard County.

The new addition to Bethesda Hospital of Crookston, Minn., was completed last month and will be dedicated on June 22d. It will accommodate twenty-three patients and cost $95,000.

At the 37th annual meeting of the Southwestern Minnesota Medical Association, held last month at Fulda, Dr. W. J. Taylor, the only living charter member of the Association, gave an address.

Dr. F. J. Souba, who has been associated with the Sivertsen Clinic of Minneapolis for the past year, has resigned from the Clinic and opened offices at 600 Physicians' and Surgeons' Building, Minneapolis.

Duluth is engaged in a campaign to raise $1,000,000 by public subscription for St. Luke's Hospital. Members of the St. Louis County

Medical Society will do all in their power to help along the work.

Dr. J. M. Dodd, of Ashland, Wis., is going to Europe for a vacation. He will be a representative of the Rotary Clubs of Superior and Ashland at the international meeting of the Rotarians in London this month.

At the May meeting of the Grand Forks (N. D.) Medical Society, Dr. James Grassick gave notes on "By the Wayside," and Drs. H. G. Woutat, A. A. Westeen, and H. J. Friesen gave their impressions of Minneapolis Clinic Week, which they attended.

The Asbury Hospital of Minneapolis, having leased its hospital building to the Government for the care of ex-service men, is raising a fund of $250,000 for building a nurses' home, which will be used for hospital purposes until the Government terminates its lease.

Dr. P. C. Pilon, of Paynesville, has gone to Europe, and will visit the hospitals of Belgium, France, Switzerland, and perhaps of Germany. He will return in August. Dr. N. O. Sandven, Dr. Pilon's associate, will have charge of the hospital work during the latter's absence.

A physician writes us that he is practicing in a county in South Dakota with barely enough people to support one physician, yet he has to share the work with a non-graduate unlicensed man whom the legal authorities seem reluctant to prosecute, public sentiment favoring this course because this practitioner was in the late war.

Word reaches us that our contemporary, THE LANCET (London), the oldest medical journal in the world, has its American headquarters in the "Bible Department" of the Oxford University Press, New York City, while its editorial headquarters are in "Amen Corner," London, E. C., England. The environment seems promising.

The Minneapolis General (formerly the City) Hospital is conducting the only school of anesthesia in this country. Physicians and dentists from different parts of the country are attending it. Dr. Arthur E. Guedel is the director of the school. A paper on anesthesia by Dr. Guedel will appear in an early issue of THE JOURNAL-LANCET.

When Drs. Billings, Vaughn, and Finney were in Minneapolis visiting the University Medical School, as noted below, they visited the St. Paul City and County Hospital as the dinner guests of Dr. A. B. Ancker, the superintendent, They spoke, in writing in the visitors' book, of the hospital as "a magnificent institution," "a splendid hospital," and "fine business."

Dr. Arthur Sweeney, of St. Paul, was elected last month, president of the St. Paul Institute, succeeding the late Charles W. Ames, who founded the Institute and who has been its only president. The Institute is a group of leading citizens, who seek to advance the best interests of St. Paul, including much charitable work. It is a high honor to be made its president.

Dr. Carl C. Chatterton, of St. Paul, who was associated for many years with the late Dr. A. J. Gillette, surgeon-in-chief of the State Hospital for Crippled Children, at Phalen Park, has been named as Dr. Gillette's successor by the State Board of Control. The appointment is an admirable one, and, no doubt, the work will go on, even with renewed interest in honor of the dead founder.

The Warren Hospital, of Warren, has passed into the hands of the Red River Valley Conference of Augustana Synod, who agree to maintain its high standard of service and to conduct a nurses' training school. This admirably conducted hospital was built mainly by public subscriptions, and has been the pride of the Warren people. Dr. T. Bratrud was the moving spirit in its founding and has been at its head for fifteen years.

The July issue of the *Medical Review of Reviews* will contain a lengthy original contribution by Mme. Curie entitled "The Radio Elements and Their Applications." It is, we believe, the first and only contribution which this noted scientist has made to an American publication and is extremely valuable. A copy of the July issue containing it will be sent gratis to any physician making the request. Address the Medical Review of Reviews, 51 East 59th Street, New York.

Dr. Victor C. Vaughn, Dean of the Medical School of the University of Michigan; Dr. J. M. T. Finney, Professor of Clinical Surgery, Johns Hopkins Medical School; and Dr. Frank Billings, Professor of Medicine, Rush Medical College, who constitute the committee asked to make a survey of the Medical School of the University of Minnesota, with recommendations, were in Minneapolis last month. A number of meetings were held at which testimony was heard as to the conditions of the school. The members of the committee also visited Rochester to observe the work of the Mayo Foundation.

An apparently dangerous malpractice suit brought against Dr. L. Sogge, of Windom, went to pieces last week in an unusual way. Dr. Sogge treated a man with a badly broken leg caused by a fall from a barn. The wound was so bad that shortening of the leg and some lameness followed. A damage suit also followed, able attorneys were engaged, and medical expert witnesses were on hand when the case came to trial. After Dr. Sogge gave his testimony, the expert Rochester witness for the plaintiff notified the plaintiff's attorneys that he would have to testify that Dr. Sogge had done all that surgical skill could do for the patient. The case was dismissed at the request of the plaintiff's attorneys.

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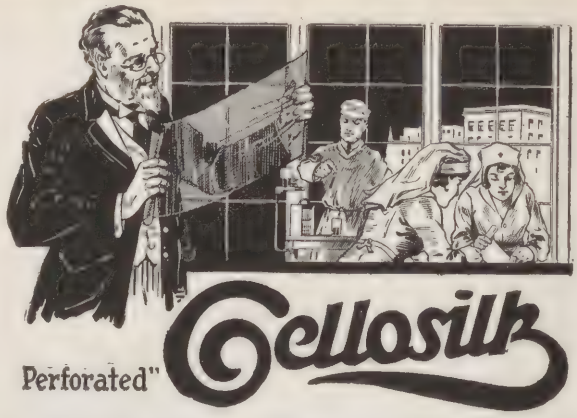
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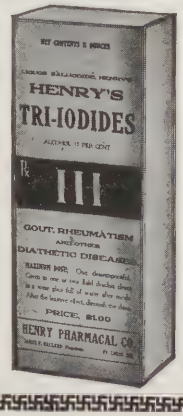
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In the Comedy Relief section of the May issue of "The Bloodless Phlebotomist" a delightful satire, entitled "Too Late Now," by James Montague, gives a mirthful view of gland transplantation vs. euthanasia at sixty. This is only one of several worth-while features of this publication. J. Petrie Hoyle, M. D., the first American physician to serve in Flanders during the World War, contributes a very interesting article on war injuries, and the article on "Treatment of Inflammation of the Fallopian Tubes," by Dr. J. Sidney Eason, Coldwater, is well worth reading.

If you have not received this little journal, a request to The Denver Chemical Mfg. Co., New York City, will bring, without expense to you, the May number as well as future issues.

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The emphasis placed upon the value of diagnosis in modern medicine has led many laymen, and possibly some physicians, to think that there is little or no value in drugs; therefore the drug iconoclast thinks he has advanced beyond his fellow-practitioner because of his emphasis upon the value of diagnosis. One of the points of value in correct and definite diagnosis lies in the fact that the right drug, if any, is indicated, and the wrong drug or drugs are not used. For instance, when the right diagnosis is made, and the chemical foods,—calcium, sodium, potassium, iron, manganese, and phosphorus,—are needed, the physician at once prescribes Fellows' Syrup, knowing that in this old-established preparation his patient will get just the right thing to upbuild him.

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TYPHOID VACCINATION

In a recent French medical journal the statement was made by Achard that since the war only the women were having typhoid fever as all the men were protected because of their army vaccinations. If more proof were needed of the efficacy of antityphoid vaccination this would command attention.

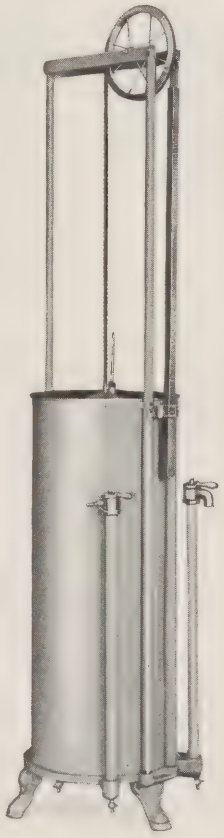
But the value of this personal prophylactic measure has been proved repeatedly. Army and navy statistics for the whole world show that the results are as good as, if not better than, those obtained with smallpox vaccination. Antityphoid vaccation at this time needs no brief. Therefore the interest in the above statement lies, not so much in its evident testimony for the value of protective inoculation for the men in the French army, as for the obvious need of it for the women who stayed at home. In short, the world need is for vaccination of the civilian population if the goal of typhoid elimination is to be reached.

"To think rationally of disease is healthy"—and to teach individuals to think sanely is most certainly a part of the physician's function. No campaign for the eradication of any disease is carried far enough to be truly effective unless people are informed of known and proved methods of personal prevention. This is especially true of a disease like typhoid and the allied infections which have to do with the two essentials of human existence—drink and food, and in which nothing except personal immunity can protect surely against the carelessness, thoughtlessness and indifference of others.

Eli Lilly & Company is urging physicians to protect their patients by vaccination against typhoid and paratyphoid fevers. Now is the time, says the Lilly Company, to inaugurate such a campaign and the use of Lilly Typhoid Vaccine or Typhoid Mixed Vaccine (TAB or Triple Typhoid) is recommended as the best method of preventing the disease and reducing epidemics. Further particulars may be had by addressing the principal office of the company at Indianapolis.

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ON THE IMPORTANCE OF RECOGNIZING SECONDARY OR METASTATIC TUMORS*

BY JAMES B. HERRICK, M.D.
Professor of Medicine, Rush Medical College, Chicago
CHICAGO

Newspaper writers are prone to begin a story with a paragraph epitomizing the news contained in the particular article. The busy reader may thus quickly tell whether he cares to look at the remainder of the article, giving the details on which the summary of the leading paragraph is based; or it may be that the headlines alone tell the substance of the news and render further reading unnecessary. If, like the reporter, I announce as my subject or as a summary of my article that its purpose is to show the importance of recognizing secondary or metastatic tumors, there would be, I fear, few listeners to what follows. All would admit the truth of my thesis and would regard it unnecessary to spend time in finding out how I reached a conclusion which is so simple as to be self-evident. I hope, however, I may be pardoned if I take a few minutes in telling why it is important to recognize these neoplasms and also in what way one may be helped in such recognition. And I do this the less apologetically because some of these facts have come to me only after several years of experience, and because in consultation work I not infrequently see the practitioner misinterpreting many of the phenomena that arise in connection with these growths.

I shall discuss the subject under the following three heads:

1. The recognition of a tumor as secondary rather than primary.
2. The recognition of metastases before operations.
3. The recognition of metastases after operations.

1. *The recognition of a tumor as secondary and not primary.*—The question often arises as to whether a nodule or mass is the original focus of tumor-growth. On this fact may depend the line of attack, for example, by surgery, *x*-ray, or radium, or whether the case is to be regarded as hopeless of successful treatment. One must admit that in many cases the distinction is of academic rather than practical interest. The patient may care little whether the mass felt in his liver is a rare primary malignant tumor or whether it is secondary to a carcinoma of the stomach or a melanotic sarcoma of the eye. But there may be more than academic interest attaching to the question whether a tumor recognized in a bone, in the neck, or in the breast is the first manifestation of the disease and is to be attacked as such, or whether it is an evidence that a tumor of the prostate, perhaps, or of the thyroid is present, and that the visible or palpable secondary tumor is a proof of the widespread dissemination of the neoplasm.

I shall not weary you by citing manifold instances of this type of secondary tumor; your own experience will call to mind many illustra-

*Presented at the annual meeting of the Hennepin County Medical Society during Minneapolis Clinic Week, April 27, 1921.

tive examples. But I wish to mention two or three types that are rather easily misunderstood. Within two months I have seen two cases of secondary tumors in the neck and mediastinum where the pressure symptoms, congestion and swelling of the face, distended vessels in the neck and over the chest, cough, stridor, and persistent and also paroxysmal dyspnea have found an explanation in the glands in the neck and in the small mediastinal mass shown by percussion and *x*-ray examination. In one case there is a primary carcinoma of the prostate with very few local symptoms. In the other I am not sure as to the location of the primary growth, possibly in the esophagus or the adrenal gland. If the mediastinal mass were primary as a sarcoma or as a Hodgkin's disease tumor, the outlook for marked improvement under treatment by *x*-ray would be excellent. The secondary carcinomatous nature of the masses, however, renders any such relatively favorable prognosis unjustifiable.

Again, a man with obscure symptoms suggestive of neoplasm reveals on *x*-ray examination a rounded mass of clear outline, two inches in diameter in the lower left chest. By careful study of the stereoscopic plates you make out another smaller mass in the right side. This multiple character of what looks like a neoplasm makes you regard it as secondary; the well-defined borders of the shadows call to mind some other form of tumor than carcinoma: they make you think of some you have seen of secondary sarcoma and hypernephroma or such things as dermoid or echinococcus cysts. You re-examine your patient with especial care, again examine the urine for blood, take his temperature for several days and find some microscopic blood in the urine, a slight afternoon temperature and, over the region of the left kidney, where a little pain is complained of, you are able to make out a mass that is indistinctly like an enlarged kidney. Gradually, the mass becomes more plainly palpable; and if you wish confirmation of the diagnosis of hypernephroma, which you now have the boldness to make, it is furnished by the pyelogram showing an enlarged, deformed renal pelvis.

There is another form of secondary growth that is sometimes quite confusing. This is the secondary carcinoma in the peritoneal cavity back of the bladder or the uterus, which by pressure gives rise to rectal symptoms. In these cases the primary tumor is usually in the stomach and is often latent or relatively symptomless. We need not discuss the interesting question as to how this tumor arises in this location,—whether by the vascular or lymphatic route or by gravity and implantation of tumor cells that have broken through into the peritoneal cavity from the growth in the stomach. But, if the mass reaches a sufficient size, it may by pressure cause symptoms not unlike rectal carcinoma,—constipation perhaps alternating with diarrhea, sense of pressure, pain, etc. And particularly if the carcinoma of the stomach bleeds the resemblance to rectal tumor may be still more striking, for the careful physician detects blood in the stool by the naked eye or the microscope, or by chemical tests. And when by digital examination he finds just above the normal prostate a hard mass of irregular contour nearly shutting off the lumen of the bowel, he may be pardoned perhaps if he reaches a diagnosis of carcinoma of the rectum and advises operation, for carcinoma of the rectum, as of the sigmoid, is justly regarded as appropriate for surgery—the number of cases of recovery and the cases with prolongation of life are numerous. But surgeons, more than once at operation, have been surprised and chagrined to find that the supposed primary growth in the rectum was really a mass of conglomerate tumors in the cul-de-sac, and more careful examination or the subsequent history has shown the existence of an unsuspected primary cancer of the stomach. A little more care in eliciting the history might have revealed suggestive gastric symptoms that would have led to a chemical examination of the stomach contents, more critical palpation, and *x*-ray examination. And the finger in the rectum might have noted that the hard, button-like or shelf-like mass projecting into the rectum seemed made up of discrete nodules though more or less confluent, and in particular that the rectal mucosa was smooth and easily movable over the mass and that the impression was really of a tumor outside the wall of the rectum and not in the wall. Since reading Schnitzler's[1] article, in 1909, I have seen this type several times and have saved myself and others from making what might have been embarrassing not to say serious mistakes. Similarly the gynecologist may encounter carcinoma of the ovary that is secondary to a latent primary tumor of the stomach.

2. *The importance of recognizing metastases before operation.*—This is one of those statements the truth of which is readily admitted. To

[1]Schnitzler, J: Ueber eine typisch localisierte Metastase des Magencarcinoms. Mitt. aus d. Grenzgeb. d. Med. u. Chir. Band xix, 205.

amputate the diseased breast when there are already numerous secondary deposits in bones, to do an hysterectomy when the growth has not only spread far beyond the limits of the uterus but when, perhaps, there is a nest of glands in the neck telling of extensive involvement of the thoracic-duct system, to operate for a non-obstructing carcinoma of the stomach when there are nodules in the liver or, as just described, in the peritoneum—this is admittedly unscientific, unnecessary, and wrong. The reason I bring the matter before you is that these simple subjects need repetition in order not to be forgotten, they need emphasis in order that the fact may continue to retain in our minds its position of importance. And I refer to this subject because in practice it is easy for practitioners and surgeons to have the attention so focused on the evident primary tumor that they overlook even the possibility of the existence of secondary lesions that would contra-indicate the operation. In nearly all of these cases the bent toward operation is not due to the influence of a prospective operative fee,—I have occasionally seen this, I am sorry to say,—but simply to forgetfulness, carelessness, and a failure thoroughly to overhaul the patient. I recall three instances in which I have vetoed operations for hypernephroma because there was proof by cough, hemoptysis, and *x*-ray examination of invasion of the lungs. Once I was in bad odor with a surgeon who asked me to treat for bronchitis his patient on whom he planned to operate for carcinoma of the tongue. He very properly did not wish to give ether to the man with cough, râles, and slight fever. Would I kindly get him into shape for a safe anesthesia? When I showed him the physical signs of chest tumors, including skiagrams that permitted only one interpretation, he reluctantly gave up.

I would not be understood as meaning that under no circumstances is an operation on a primary tumor justifiable when there is proof that, owing to extensive invasion of neighboring structures or to metastatic spread, all of the new growth cannot be removed. There are circumstances that make such operations proper. Just as a tracheotomy may be indicated to prevent death from suffocation, though the carcinoma of the larynx is inoperable, so a gastro-enterostomy for the relief of malignant obstruction or the removal of a carcinoma that is occluding the bowel may be clearly proper for the prolonging of life and the relief of suffering, though the surgeon may know full well that the disease has already spread far beyond the limits of his field of operation. So, too, operations frankly admitted to be non-curative are justifiable to remove danger of hemorrhage or to lessen danger of secondary sepsis or even the annoyance and discomfort that may attend sloughing, foul-smelling lesions as advanced carcinoma of the breast or uterus. Partial gastrectomy for carcinoma of the stomach in the presence of metastases is frequently done in some clinics to prolong life and remove an ulcerating, distressing focus.

And there may be more than we know to the belief of some that the operative removal of a primary tumor, for example, of the stomach or breast, may greatly retard the advance of the disease, even though at the time of operation there is evidence in glandular involvement that the process has been quite widely disseminated. The retarding influence of postoperative use of *x*-ray or radium in such instances is also worthy of consideration.

3. *The recognition of metastases after operation.*—Some six years ago I wrote a short article on "Certain Medical Aspects of Recurrent Malignant Tumors."[1] As this article had not a wide publicity I feel justified in quoting freely from it in what I present to you tonight. (Herrick, J. B., Amer. Jour. Med. Sci. July, 1915, Vol. CL, No. 1, p. 25.) It is frequently the experience of physicians to see a patient from whom a malignant growth has been removed long before, in whom recurrence has taken place, not at the site of operation, not in the shape of visible and palpable tumor masses in distant parts of the body, but with symptoms that resemble those of a so-called medical or internal disease as distinguished from the external or surgical, that is, operable, affection. To such manifestation the term medical or non-surgical recurrence may be applied, though such a use of the term recurrence is open to criticism, because in the strict sense it is not a recurrence. The distant foci of tumor cells were already established at the time of operation, though dormant, but are now aroused into activity; or tumor cells slipped into the circulation during the manipulation of the operation and, lodging in distant parts, later produce the symptoms to which reference has been made. So these are really borderland cases and not strictly medical.

Four things are likely to stand in the way of the early and easy recognition of the presence of these so-called medical recurrences: (1) The fact that there is no recidivation at the site of

operation; (2) the fact that no tumor mass can be made out in other parts of the body; (3) the long duration of time that may have elapsed since the operation, during which time the patient has apparently been heathy, and (4) the fact that the symptoms are not those commonly associated with tumor, but, rather, those of some other, often a so-called medical, condition.

The first three stumbling-blocks to diagnosis should be easily avoided by remembering that they are by no means exceptional, and should not be given much weight in excluding the presence of neoplasm. The thoroughness with which surgeons today remove tumors, for example, of the breast, makes recurrence *in situ* comparatively rare when an early diagnosis has made an early operation possible. A soft, pliable scar with no regional glandular involvement proves the conscientious carefulness with which the surgeon has done his work, but does not exclude metastases elsewhere. And these metastases need not be large masses in order to produce symptoms. We are familiar with the large tumor in the abdomen that comes after the removal of a sarcomatous testicle; or the indurated mass found in the pelvis on rectal or vaginal examination, which represents the recurrence after operation for carcinoma of the uterus or rectum; or the enlarged liver that appears after the removal of a melanotic sarcoma of the eye or a cancerous pylorus. But failure to find such frankly neoplastic deposits should not cause us to rule out the presence of smaller and hidden ones. Nor should a lapse of many months or even two or three years throw us off our guard and cause us to feel secure against return of malignant growth. Longer periods than this may elapse before there is evidence of metastatic activity. I have known eight years to pass after the removal of a carcinomatous breast before the patient succumbed to metastases, which were evident only at autopsy.

The fourth difficulty is one not so easily surmounted. At times it is only by careful exclusion of other diseases, or by patiently tracing some atypical symptom or sign to its malignant source, that a correct diagnosis is made; and often this diagnosis can be only a presumptive one.

Some of these clinical features are worthy of special consideration. Among them are nervous symptoms, which may often accurately resemble those of other diseases. Thus pain in the lumbar, sacral, and gluteal region may readily pass for sciatica. It may, in fact, be genuinely sciatic in origin, a nodule pressing on this nerve, or tumor cells invading the nerve sheath. At times, however, a careful examination will show a tenderness that is in the sacrum or the lumbar vertebræ, rather than in the nerve itself. It represents a bone metastasis with perhaps pressure on the nerve roots as they leave the vertebral canal. One of the confusing features in some of these cases of severe lumbar and sciatic pains—and the same is true of Pott's disease and the spondylitis of typhoid—is the fact that the patients often become "nervous," sleepless, complaining, even hysterical, craving morphine, and the thought of the whole trouble being functional, a sort of railway-spine affair, may be entertained. The true nature of the lesion may be revealed only when a pressure paraplegia supervenes. Neuralgic pains in other parts of the body, as in the intercostal nerves or in the scalp, may have their origin in deposits of tumor in bone. That certain tumors, as of the breast, thyroid, prostate, and adrenal, are prone to form metastatic deposits in bone is well known. No pain, therefore, occurring in a patient who has been operated on for a malignant growth, and especially a growth in one of these organs, should be passed as due to simple neuralgia until careful search has been made to exclude bone metastases. At times an irregularity or swelling of the surface of the bone over the spot of tenderness will be helpful. The bone may crackle or fracture under even light pressure, as I have seen happen in the case of a rib. The röntgenogram may show focal changes in the bone; and myelocytes or other blood-changes may be suggestive of involvement of the marrow in disease. A somewhat confusing feature is the disappearance of pain over the site of a bone-deposit and the variation in tenderness that may materially change from day to day. My colleague, Dr. Phemister, tells me that this occurs in the bones of the extremities and that he has recently seen a carcinoma of the prostate with long-bone metastases and variation in pain and tenderness treated for months for rheumatism. He further states that the ossifying type of metastasis is more apt to cause these changeable symptoms, and it is oftenest overlooked by the *x*-ray man, for he is searching for signs of bone-destruction. Perhaps variation in circulatory conditions may explain some of these variations in pain; and one may conceive of the tumor mass breaking through a surrounding shell of bone, the pain lessening as the pressure is relieved. Cerebral symptoms may be variable, for example, symptoms of brain tumor from meta-

static deposits. In one case, months after an amputation of the breast, in which local recurrence had taken place, a sudden plugging of the central artery of the retina occurred, presumably by tumor cells. Once I was caught napping when a nervous, self-centered man complained of occasional attacks of dizziness with a tendency to stagger at times. I knew that not many months before he had had a hypernephroma removed. I was on the lookout for evidence of deposit in bone, but overlooked what was really plain evidence of a tumor within the cranium. Once I saw choked disk, blindness, headache, and all the frank symptoms of a metastatic cerebral tumor secondary to hypernephroma. And dizziness and staggering gait were recently the first evidence of secondary tumors of the skull in a case of primary prostatic carcinoma, though high blood-pressure, deafness, and roaring in the ears made me linger long about the diagnosis of Menière's disease on an arteriosclerotic basis.

Another group of symptoms, often confusing, concerns the respiratory tract. Long after the operation a patient may be taken with a cough, and then develop what seems to be an ordinary bronchial catarrh. The cough persists, dyspnea appears, and there is some cyanosis. The sputum is scanty, or it may be mucous or blood-tinged Râles, dry and moist, may be heard in various parts of the chest, and possibly here and there are made out areas of harsher respiration, or perhaps a spot of dullness. There is little or no fever, as a rule. Dyspnea may increase, and the respiration grow hurried. There is some loss in weight. It is necessary for one to see an autopsy on only one of these cases, with the lung riddled with small or larger tumor nodules, to be able to understand how the condition resembles clinically miliary tuberculosis. Of course, larger masses may produce symptoms that are more clearly those of tumor. These larger tumors are more easily recognized, or at least suspected, from the predominance of pressure symptoms. The Röntgen rays in both types of thoracic metastases may be of material help in diagnosis.

Another metastatic phenomenon, often a late one and often the first sign of failing health after the operation, is pleural effusion. Local pain with friction-rub may clearly indicate involvement of the pleura; or dyspnea and dry cough may lead to an examination of the chest, and a pleural cavity may be found to contain a large amount of fluid, no pain worthy of the patient's notice having been complained of. At times pain, some fever, or rapidly developing dyspnea will make the process resemble tuberculous pleurisy; or even a pneumonia may be thought of if bronchial breathing be detected in some part of the affected side. Rheumatic, tuberculous, and traumatic origin for the pleural fluid, as well as the ordinary causes for hydrothorax, must be excluded as accurately as possible. Bloody fluid obtained by exploratory puncture, the fluid perhaps containing tumor cells or large multinucleated cells with mitotic figures, and lacking the lymphocytes and tubercle bacilli of tuberculous fluid, may be of material help. Often the fluid recurs even after repeated tappings that may be necessary for the relief of pressure. At times it will disappear. Such a disappearance took place in a remarkable case which I saw of late metastases months after the removal of a malignant syncytioma. Sudden large pleural effusion with pain and some fever followed the carriage into the pleura of the tumor cells. These apparently gravitated to the bottom of the pleura, where a large growth developed, invading the diaphragm and the lumbar vertebræ, leading ultimately to paraplegia and death. No tumor mass was ever made out on physical examination during life, and no pelvic recurrence took place. The autopsy revealed the above chain of events.

Pleural fluid, therefore, in one who even years before has had a malignant tumor removed should arouse the suspicion of pleural metastases, nor should the temporary disappearance of this fluid lead to a too confident quieting of this suspicion.

Another remarkable phenomenon was seen in a young man of about twenty years, who consulted his physician for slight temperature, cough, and symptoms suggestive of incipient tuberculosis. A sudden and severe hemoptysis occurred. The acute anemia was extreme and out of all proportion to the amount of blood lost externally. Dyspnea was pronounced. The explanation was found in a hemopneumothorax. The lung had ruptured and a large amount of blood with air was in the pleural sac. Death from anemia seemed imminent, but after many days of delirium, prostration, and fever due to absorption of the blood, improvement occurred, and the boy returned to his home. The explanation for this odd occurrence was found in a metastatic sarcoma of the lung. Five years before, the boy's thigh had been amputated for sarcoma of the tibia. There was no local recurrence. A few months after the pulmonary accident just described the boy died with every evidence of thoracic tumor. I have seen another case of

metastasis in the pleura with fluid long after amputation of the leg for sarcoma, and one after removal of the testicle.

Just as a pleurisy, especially an afebrile pleurisy, should arouse in these patients a suspicion of the localization of secondary tumors in that tissue, so an otherwise unexplained ascites should lead to a careful examination for proof of the malignant origin of the abdominal fluid from direct involvement of the peritoneum or pressure on the larger trunks of the portal vein. Bloody or chylous fluid may be significant.

Personally, I have never seen clinical symptoms from involvement of the heart by tumor metastases following operation, though at autopsy symptomless nodules in the myocardium or pericardium are occasionally met with. Nor have I noticed clinically symptoms that could be referred to metastases in the kidney.

One type of disease due to these metastases is characterized chiefly by severe anemia and marasmus. This I have seen in a recurrence after removal of carcinoma of the breast. In this instance symptoms like diabetes insipidus were present for many weeks. While autopsy of the body showed numerous nodules, the brain was not examined. Perhaps here was the tumor that induced the polyuria, by pressure on the hypophysis. In another case a profound anemia much resembling pernicious anemia came on months after an operation for carcinoma of the penis.

Occasionally there is reluctance to accept a diagnosis of postoperative metastasis, because a nodule appearing after the operation in some distant part of the body has for a long time remained stationary in size, or has even, at times, seemed smaller. This should not, of course, rule out a malignant growth. The glands in the neck that are secondarily carcinomatous, as with primary cancer of the stomach, do not, of necessity, grow rapidly. I have seen a carcinomatous gland in the right side of the neck remain the size of a hickory-nut for a year, its first appearance being a few months after the removal of a breast for carcinoma. This patient had also carcinoma of the vertebræ, with later paraplegia.

Every physician knows the danger there is in asking a patient what in the law courts are called leading questions. Unconsciously we may suggest answers to such a patient, or lead the history away from facts that would otherwise be clearly brought out by the patient's unguided recital of the history. But there are times when direct questioning is necessary and where it must be pressed. We know how a patient who fears tuberculosis will dodge and evade a direct answer that seems to him incriminating. We must often push the questions and insist on definite answers.

Similarly, unless direct questioning is resorted to, one may sometimes fail to learn of the previous operation; the patient may forget to speak about it, or may regard it as insignificant, or may be purposely concealing the fact. Even the physician may at times be inclined to underestimate the importance, from a diagnostic point of view, of the removal of a seemingly insignificant pigmented mole, or a "polypus" from the neck of the uterus. And the patient may have been given to understand that the tumor was innocent, though a telephone conversation with the surgeon who operated, or a reference to hospital records, might reveal the malignant character of the growth. A fear of learning the serious nature of the illness may induce a patient purposely to make false or misleading statements regarding previous operations, or to conceal the scars of these from the eye of the examining physician. I well remember a case of left-sided pleural effusion in a woman whose left breast had been removed some time before for carcinoma. The careful doctor had made several examinations of the chest, and had recognized the fluid, but through seeming modesty, as became a maiden lady of fifty, the clothing was on the occasion of these examinations always deftly arranged by the patient so that the scar of the operation was covered. Great was the surprise and embarrassment of the doctor as this scar came into view when, at the consultation, in response to insistent requests, the clothing was removed from the chest. The clue to the nature of the pleural effusion was evident. The possibility that a scar may mean the previous removal of a malignant growth should always be taken into consideration, whether such scar be on the lip, the scrotum, the cervix uteri, or the breast—in fact, anywhere. An absent eyeball has more than once led to the diagnosis of melanotic sarcoma of the liver.

To conclude, therefore, we shall all agree to the correctness of the three propositions that I laid down in the beginning: (1) It is important not to mistake a secondary tumor for the primary growth; (2) it is important to recognize the existence of metastases before operation; (3) it is important to recognize metastases after operation.

SYMPOSIUM ON ANESTESIA*

A. E. Guedell, M.D.

A. F. Bratrud, M.D. S. R. Maxeiner, M.D.

PRESENT STATUS OF GENERAL ANESTHESIA

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The present status of anesthesia is good, bad, or indifferent, depending upon the particular community under observation; yet on the whole it is improving.

There is the progressive community in which the standard of anesthesia is good, providing that such community has been progressive in this branch long enough to have attained the higher standard. Then there is the satisfied community in which the anesthesia is bad or indifferent.

Minnesota has been slow to attend to the elevation of its standard of anesthesia, in consequence of which the anesthesia in Minnesota is, at best, indifferent; however, Minnesota, in this respect, is beginning a change for the better, and, judging from the medical history of this state, Minnesota will take hold fast, and anesthesia here will be raised rapidly to the top.

The practice of anesthesia as a specialty in medicine is comparatively new. A few good men in years past have devoted their efforts to it, but until recently they have been few indeed. The average graduate in medicine has had the idea that the practice of anesthesia was beneath his dignity. In many communities he has seen most anesthesias conducted by nurses, and has perhaps disdained to stoop to do a thing which he believed so simple that it could be entrusted to a nurse. As a result, the average hospital interne has looked upon his anesthetic service as a thing to be avoided, if possible, and consequently he has gone out into practice with but little knowledge or experience in this work.

The nurse-anesthetic technician in some communities has gained a reputation in anesthesia because her work has been compared only with that of the untrained physician, who, being a physician, was supposed to set anesthetic standards, even though he had had no training whatever in this branch of medicine. It seems that the prevalent idea of anesthesia in the less progressive communities, is to get by for the period of the operation to the satisfaction of the surgeon, and let the post-operative period for the patient go as it will.

Until within the past few years none of our medical colleges taught anesthesia. Most of them do not yet have it in their curricula as a special subject. The average course of anesthesia, even in many of our better schools, consists of some mention of the subject in connection with the teaching of surgery, plus the opportunity for the student to administer three or four anesthesias during his senior year. Now, however, our progressive physicians and surgeons are paying more attention to anesthesia than formerly, but by no means enough for the conservation of their patients' welfare or their own. Some of our colleges have included full courses of anesthesia in their curricula, and a few have awarded full professorships for the directors of these courses. Having once elevated its anesthesia standard, no school has permitted it to lapse. The progress has been stable. Inevitably, all Class A schools will follow in this matter of better anesthesia.

The history of anesthesia is interesting. First came ether, to be supplanted almost immediately by chloroform, which held its own for about forty years. Then ether returned in spite of its unpleasantness, because of its greater safety. Nitrous oxide, which before had been of value for short operations only, was combined with oxygen and its advance since then has been great. Chloroform is almost forgotten. Ethyl chloride has been from the beginning a sort of "hanger-on" for short operations and the induction of ether with a good deal of mystery attached to it.

In the hands of the average anesthetic technician, ether is probably safer, and is better for the operator than nitrous oxide, and because there are so many such technicians working ether is giving way but slowly. The nitrous oxide and

*Presented at Minneapolis Clinic Week at Minneapolis, April 25, 1921.

oxygen anesthetic in the hands of the average technician is not a nitrous-oxide-oxygen anesthetic at all, but a nitrous-oxide-oxygen-ether anesthetic, often enough ether being admitted through the gas apparatus to have maintained alone an adequate ether anesthesia.

There is no question about the superiority of nitrous oxide in the usual surgical case, provided it be administered by a really skilled anesthetist.

It is much easier to get by for the period of the operation with ether than with nitrous oxide, but the patient usually pays heavily in postoperative suffering and depression for the frequent overdose of ether administered. *The surgeon rarely sees the immediate postoperative period. Consequently he usually does not know what sort of an anesthesia his patient has had.*

An overdose of ether does not mean that there must be an accident or near accident on the table: it means any quantity of ether administered over and above that which is actually necessary to provide an adequate degree of anesthesia in a given case, and, although the anesthesia on the table may be apparently good, the patient pays proportionately during the postoperative period for every drop of ether given over this necessary amount.

In the past few years rapid progress has been made in the development of anesthesia technic. The trouble is, that, as the technic has been advanced, the advancement has remained in the hands of a comparatively few, and the public at large, as well as the medical profession, have not been properly benefited. This is because the teaching facilities for the proper distribution of knowledge on the subject have been insufficient.

Minneapolis has taken a step forward for the dissemination of knowledge in anesthesia in the establishment of a postgraduate course of anesthesia at the General Hospital. When this school was started some time ago it was open to graduate nurses as well as to physicians and dentists. But after May 1, 1921, it will be open only to graduate physicians and dentists. The nurse, with her insecure foundation in physiology, pathology, and medicine, is not able to assimilate to the proper degree the modern details of the subject of anesthesia.

The success of this school is assured by its conversion to a true postgraduate course of the highest standard, and the name of the Minneapolis General Hospital and, later, the entire state of Minnesota will be heard in connection with better anesthesia. And the standard of anesthesia in this state will be raised accordingly.

Although this is probably the first true postgraduate school of anesthesia to be established in this country, Minnesota is by no means the first to attend to the elevation of anesthesia standards. The East has its anesthesia in the majority of cases conducted by specialists in this line. There are still a few anesthetic technicians there in some of the hospitals, but these are decreasing in number. The state of Ohio is, with the exception of a few hospitals, covered by the professional anesthetist. The entire Pacific Coast is now in the process of transition to a higher standard, and the state of Missouri, and especially Kansas City, is demanding the better anesthesia of the professional anesthetist.

The state of Indiana, where I have practiced this branch of medicine for the past twelve years, hardly knows a nurse or other anesthetic technician.

These changes are brought about, as a rule, by the demands of the public and the general physician who refers the case to the surgeon. The general physician, usually, knows the condition of his patient from an anesthetic standpoint better than the surgeon, and it is he who calls the attention of the patient to the importance of this phase of the operation.

With the hospital it is probable that the nurse-technician is employed for two reasons: (1) that such low-priced service offers a better commercial proposition for the hospital; (2) and I have no doubt that this is the foremost consideration in those hospitals which are honest in their efforts—the nurse employed for all time is likely to administer an apparently better technical anesthetic for the period of the operation than has been heretofore given by the average untrained interne during his fleeting service on anesthesia, in which he has had no interest.

The solution is to train the physician to perfection in this work and let his fee be paid by the patient. In every instance where the patient has learned the difference between good and bad anesthesia, that patient has demanded good anesthesia and has paid for it just as willingly as for the surgical operation itself.

In communities where the professional anesthetist has been operating long enough to have gained recognition of his work, it is noteworthy that he is always called to anesthetize the physician or a member of the physician's family whenever an operation may become necessary there. There are almost no exceptions to the rule that, when surgery falls into the physician's own fam-

ily, the anesthetist is selected with the same care as is the surgeon.

In France during the late war most of the anesthesias to soldiers were conducted by non-professional anesthetic technicians who, in the emergency, had been instructed in groups by expert anesthetists. This was because there were not at the time enough physicians there to do the work. But when an officer, especially a medical officer, was to be operated on, one of the professional anesthetists was usually called upon for the anesthetic service in the case. It was also noteworthy that when a nurse was to be operated on she requested the professional anesthetist in her case, not trusting her own associates among the anesthetic technicians.

All of this has its significance. It means that where better anesthesia is known, those who know it want it and are willing to go to considerable trouble to get it.

The service that is sought by the physician in the case of himself or a member of his family, is not too good to be offered to his patients in general.

You will say, "They will not pay for this extra service." I answer that they gladly pay when they understand what it means to them. Not only is it that they gladly pay, but the time is near when they will censure their physicians, during their postoperative period, for having failed to secure for them skillful anesthesia, which would have saved them much discomfort and enhanced their recovery to a considerable extent.

In Indiana—and, gentlemen, Indiana is a good state—the anesthesia is as much discussed over the afternoon bridge table, as is the operation, and folk who know have their family anesthetist the same as they have their family physician, surgeon, obstetrician, pediatrist, or other specialist.

These things have been brought about in every community in which the professional anesthetist with his higher standards has entered. That it is to happen here is inevitable. Our better society, the same class who ride in the Pullman or the extra-fare train, in preference to the day coach or the accommodation, are demanding it, because it renders their operative journey safer and pleasanter, and insures an earlier return.

As for the surgeon: he will be delighted. In many cases he has adapted his skill to operating under poor or indifferent anesthesia. That same skill could do better and faster work under good anesthesia. No one knows this better than the surgeon. And he knows full well the pleasure of the sense of security in operating under anesthesia which he knows to be safe. He has his bad risks in surgery, and these are made worse risks by poor anesthesia, whereas with the anesthetic in the hands of a skilled professional anesthetist, who understands the difficulties of the case from a medical and surgical, as well as from an anesthetic, standpoint, this bad risk often becomes not a bad risk at all.

The preparation of the special anesthetist should be conducted with the same care as for any other specialty. First, there should be the foundation of a good medical education fortified by an adequate hospital service, in medicine and surgery, as an interne. Then he should begin his postgraduate work either in a postgraduate school or under a competent anesthetist. This postgraduate study should continue with himself for the rest of his life or as long as he practices anesthesia. It is so with all other specialties and is equally necessary with anesthesia, if one would succeed.

Our best type anesthetist of today has been built upon this plan and he has risen in his work or stayed down, according to his inclination to work or loaf, and, in working, to produce. Given proper training, the able and constructive thinker, in any specialty, will rise and will lift his specialty up with him.

The ideal conduct of any anesthesia calls for the examination of the patient by the anesthetist, preferably at least the day before the operation, the directing of proper pre-anesthetic preparation, and the careful plotting of the course of anesthesia as indicated by the patient's own peculiar requirements, from surgical, physical, and mental standpoints.

With anesthesia, as with all things else, knowledge without skill in its application is of little value, and skill without knowledge is impossible.

This paper may be considered in the nature of an exposition or an appeal. If as an appeal let it be an appeal to your good judgment in this matter, and to your pride in the preservation of the dignity and progress of the profession of medicine in Minnesota.

THE TECHNIC OF ADMINISTERING LOCAL ANESTHESIA

By S. R. Maxeiner, M.D.
MINNEAPOLIS

It is so manifestly impossible to cover this large field in the brief time allotted me, I shall be able only to mention certain important facts regarding local anesthesia, but I shall attempt to cover a few more in detail.

Novocaine is thoroughly efficient, and the safest local anesthetic available today. It may be used almost ad libitum when properly administered. Concentrated solutions are more toxic than dilute ones. Intravenous administration is the most dangerous of all, and should be avoided. A tourniquet or adrenalin add to the duration of the anesthesia, but adrenalin solution is dangerous in the presence of a terminal circulation. Thorough knowledge of the methods of producing local anesthesia, their daily use, and a standardized technic are as essential here as in any other part of the field of surgery.

Infiltration is by far the most simple method of producing anesthesia and carries almost 100 per cent efficiency. Edematization of the field may have certain objections, but, if properly performed, does not interfere with the operation nor with primary healing, as is so often claimed. However, even this simple procedure demands familiarity with principles of technic. The making of secondary wheals from below, as advocated by Dr. Farr, is an important advance over the older procedure of making the usual punctures in sensitive skin. This procedure is especially applicable to incisions in the abdominal wall, where all of the tissues through which the incision is made are infiltrated, layer by layer. It is very rapid, and we have repeatedly made the infiltration and opened the abdomen in six minutes.

Regional anesthesia, or nerve-blocking, includes the following methods: (1) intraneural injections, (2) paraneural injections, (3) spinal analgesia, (4) intravenous injections, (5) intra-arterial injections, (6) circumferential infiltration of Hackenbruch, and (7) caudal anesthesia. For the most part the name in each case designates the principle underlying the method. It will be possible here only to touch on what the author considers the most important.

Intraneural injections are especially applicable to the fifth nerve and its branches, the brachial plexus over the mid-point of the clavicle, the ulnar, sciatic, etc. It, however, carries with it a larger percentage of failures, and demands much greater skill than the paraneural injections or infiltration block. By the latter method a larger amount of a more dilute solution may be deposited in proximity to the nerve, and, as a result, it carries a much higher percentage of success and makes it a much more efficient method in the hands of the average surgeon. This procedure is especially adapted to use in the scalp, neck, thorax, the extremities, and inguinal hernia; and, in combination with infiltration, it is, without doubt, the method which possesses the greatest possibilities with the fewest failures.

By circumferential infiltration the operative field is circumscribed. The advantage gained by having no solution in the tissues of the wound is more theoretical than practical, and is offset in the abdominal wall by the larger amount of solution required. Its distinct field of usefulness is in umbilical hernia, in amputation of the breast, and in the removal of large, superficial tumors or tumors with broad bases.

In caudal anesthesia the anesthetic solution is introducted through the terminal sacral foramen and is extradural. This method produces ideal anesthesia for work on the perineum and in the pelvis, but it is, however, not absolutely free from danger nor from failure. Splanchnic anesthesia is as yet in its infancy, but is rapidly coming to the front as an aid in abdominal surgery. In some foreign clinics this procedure is carried out by injection in the retroperitoneal space through the back. This necessitates part of the injection being made with the patient on his side or lying face downward. Later he must be turned over for the operation and we have found that repeated manipulations, changing the position, and numerous injections greatly interfere with the success of local anesthesia and, if too complicated, will not be generally accepted. For that reason we have preferred to do our splanchnic blocks from the front with the abdomen open. The retroperitoneal tissues may be reached through the liver, the nerve supply to the bile-ducts and the stomach may be completely and efficiently blocked. Likewise the nerves to the bowel, uterus, and other organs may be similarly anesthetized.

NOTE—The remainder of the time allotted the speaker was used in showing lantern-slides demonstrating the technic of local anesthesia injections.—THE EDITOR.

PRESENT PROBLEM OF LOCAL ANESTHESIA

By A. F. Bratrud, M.D.
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It is the object of this paper to present some of the problems of local anesthesia, advantages, disadvantages and conclusions formed from experience with this art. In the true sense of the word, it is not an anesthesia, but an analgesia.

Of the various drugs used at the present time, novocaine, quinine urea hydrochloride, and cocaine are used most extensively, the cocaine being limited almost entirely to the specialist's field. Quinine urea hydrochloride used in 0.5 per cent solution is very satisfactory, provided it is not used in the skin, for here it may cause a severe burning sensation and at times sloughing. One objection is the time required for anesthesia after the injection has been made. It is very good where a prolonged anesthesia is desired secondary to the primary anesthetization. Novocaine is used in from 0.5 per cent up to 4 per cent solution, the strength varying according to the method of anesthesia used, and the duration of the anesthesia desired. Best results are obtained by using it in either normal saline or Ringer's solution. Apothesine as a local anesthetic is not used so extensively on account of it not meeting the standards claimed for it. Saliginen, a new product recently isolated by Dr. Hirschfelder at the University of Minnesota, has been giving good results in the few cases in which it has been used, and promises well for the future. The toxicity of novocaine and saliginen is so small that it does not have to be seriously considered. As much as 300 c.c. of 0.5 per cent solution of novocaine can be used in the usual case, though very rarely is it necessary to use so large a quantity. There has been as much as 540 c.c. of a 0.5 per cent solution used in Dr. Farr's clinic without any toxic effects.

Preparation, sterilization, preservation, and handling of solutions will be discussed by Dr. Maxeiner, as also the technic in his paper to follow.

The simplest, safest, and surest technic is the best. As a rule, most surgeons use local anesthesia for very minor procedures or for difficult operations because of physiological or pathological changes that contra-indicate the use of general anesthesia. If a person intends to use this method in grave risks and difficult operations, he should visit clinics where this work is being done so that he may learn details. He should use it in the interim cases, so as to perfect his technic and gain sufficient knowledge of the subject to perform it satisfactorily. Gentleness and skill in handling the tissues are developed only with experience. Without knowledge and experience, the surgeon's field will be limited.

The subject of local anesthesia should be given more attention in our medical schools. By so doing a broader knowledge of topographical anatomy is given the medical student. No one can deny but that the question of local anesthesia has given a new impetus to anatomic teaching and a desire for a more thorough knowledge of anatomy. In regional work this is especially true. The teaching should be carried through the hospitals so that the student will continue to increase his knowledge of regional anatomy, thereby not only becoming more proficient in the fundamentals underlying local anesthesia, but at the same time increasing his knowledge of regional surgical anatomy.

There are some requisites which are necessary for success. First of all is the coöperation of every person connected with the patient. This means from the time that the patient enters the examining-room until he leaves the hospital. Often a patient will anticipate trouble because an admitting clerk or a nurse, ignorant of the harm being done, will give advice as to the form of anesthesia. Nurses or attendants should be absolutely prohibited from giving advice or suggestions in any pre-operative case, no matter what form of anesthesia is to be used, except suggestions that will give encouragement and allay fear and anticipation. Suggestive remarks as to pain or fear by nurses, attendants, or spectators in the operating-room may change the attitude of a satisfied patient into one anticipating pain, and so cause complaint from most trivial noises or the slightest pressure.

Narcotics are given, as a rule, the morning of the operation, usually morphine $\frac{1}{6}$ and scopolamine $\frac{1}{200}$. This can be repeated, depending upon the effect produced by the first injection. This rests entirely with the surgeon. In a neurotic individual it does help to relieve fear and anticipation of pain. For children or young adults it is not necessary. We must admit that to lie quiet

on an operating-table for any great length of time is a task for any healthy person. The room should be kept darkened, and no visitors should be allowed in the room previous to operation, for our aim is to have the patient in as quiet a frame of mind as possible. Under no condition should a major surgical patient be made to walk from his room to the operating-table. On the table the patient should be put in the most comfortable position possible so as to avoid any straining of ligaments.

Attention to details must be remembered. It is just as necessary in this form of work as in construction of a fine piece of machinery.

Knowledge of limitations should always be known. There is no harm in using a combined form of anesthesia if a patient complains of pain. It is often the greatest satisfaction to see a patient quiet down, after a few drops of ether or a small quantity of gas has been given, so as to take his mind away from the field of operation. Often this is the ideal anesthesia, for there is loss of impressions from the field of operation. For this the state of anesthesia is not necessary, but only a state of analgesia. Often it seems as though novocaine and ether are synergistic in action. Shock can be produced just as easily from pain or from rough handing and manipulation of tissues as from a general anesthesia. I think that where a patient has suffered pain during the operation his conditions is much worse at the end of two or three days. No attempt should be tried by inexperienced surgeons to perform impossible work. Knowledge and experience are necessary so that the surgeon will know limitations and when to use a combined form.

A few remarks about sensitiveness of tissues in the various locations should be made. The periosteum, perichondrium, and synovial membranes are very sensitive. Bone is not sensitive, although bone marrow is slightly sensitive. In the abdomen the parietal peritoneum is very sensitive, whereas the visceral peritoneum is not sensitive to pain. Subacute Peritonitis causes a lymphangitis of parietal subserous connective tissues, and thereby increases sensitiveness of cerebrospinal nerves. Irritability of the nerves of the peritonitis is more marked with any subacute or acute peritoneum. Traction on the mesentery will produce pain, nausea, or vomiting, but it is surprising how much traction can be made, providing it is done slowly and carefully. The round ligaments are very sensitive, but can be handled very easily when properly injected, and very often without infiltration when a caudal anesthesia is used.

The disadvantages are more imaginary than real. Time is only a relative matter, but is an essential consideration where a general anesthetic plays the important part. Under local anesthesia sufficient time can be taken to follow a finished technic, where often under general anesthesia it is of the most urgent necessity to finish the work as soon as possible. In these grave risks the ideal anesthesia, if any anesthesia can be called ideal, is the combined form; for ether or gas-oxygen need only be given to a state of analgesia and only during the time that the surgeon will be working in a sensitive area. Hematoma and serous accumulation in wounds will give no trouble provided all bleeding vessels are tied and loose suture of the wound is practiced.

Infection is always spoken of as being higher. This is a false idea, conveyed by men who are not experienced with the work. There is less manipulation and trauma of tissues with the gentle technic necessary for successful performance of major surgery under local anesthesia. Every one will admit that both of these play an important part in infection of wounds. A careless operator will have more infection, but this can be blamed on several factors, namely, no attention to details in handling of solutions, poor technic, etc. Such a man should not attempt this work.

Abdominal exploration can be successfully performed in a large percentage of cases by vertical retraction and careful handling of viscera. It is a visual examination, plus a manual exploration, and not a manual exploration alone. Abdominal work calls for a technic entirely different from that used under general narcosis. The viscera can be handled without pain, and a limited amount of traction can be made on the mesentery without causing pain, nausea, or vomiting, provided it is done slowly and carefully. More care has to be exercised in case of an acute or subacute abdomen.

Often in borderline cases where diagnosis is not certain, the diagnosis can be cleared up with the aid of the patient. If traction is made on appendix, gall-bladder, or adhesions sufficient to produce pain, the patient will tell you whether it is the typical pain for which he is seeking relief. Parietal and visceral adhesions are at times taken care of much better, as the parts are at rest and a more careful dissection can be performed. Combined anesthesia or rather a state of analgesia is

most satisfactory in caring for these conditions, for here there is present the negative pressure plus the parts at rest.

The psychic element is a factor to be contended with. In a neurotic individual the question of anesthesia should not be mentioned. If it is elicited that a patient has a prejudice toward local anesthesia, nothing is said relative to this until the operation is well under way, and, as a rule, the patient is satisfied to continue. Often an operation can be completed on these patients when they are waiting for what they believe to be the preparation of the operative field.

A large majority of patients come because they have heard that the operation can be successfully performed without taking ether, for ether and the idea of going to sleep are what they dread. With this type of patient, I think it is advisable to explain briefly the method, with the result that there is better coöperation and understanding between the surgeon and the patient. Often when a patient is told about the form of anesthesia, his attitude of confidence will be changed to one of fear and anticipation. The question of anesthesia should rest entirely with the surgeon, just as much as picking out his instruments. Dr. Farr has very favorably proven this view by the fact that very young children are very good subjects for major surgical work. Neurotic patients or certain hyperthyroidism cases should not be told, as they are far better subjects when no mention has been made of the form of anesthesia to be used. Here I think that mixed or combined form of anesthesia is best.

The advantages of local anesthesia are gaining ground rapidly with experience. With work on the extremities, as with work on any part of the body, there is the coöperation of the patient so as to have the part in the most advantageous position for the best work. The sensation of pain is lost and a limited amount of motor power is present; and this is a most desirable feature where any tendon-reconstruction or transplantation or any tendon work is being performed. Time is here a great aid, as the surgeon does not have to hurry, but can make a most careful dissection. In the region of the neck, there is not the engorgment of vessels that is so often seen when the head is turned to one side under general narcosis. I have never seen injury of a recurrent laryngeal nerve in any goitre operated on under local anesthesia. There is not the danger of loosening up dressings and soiling of the wound from post-operative vomiting and retching. For reduction of fracture of the upper extremity it is the ideal anesthetic, especially in the rural districts. With the few advances made in surgery of the chest we have the added advantage of immediate feeding, which is so essential in this class of cases. Nausea and vomiting are practically nil in abdominal work, provided no traction has been made on the mesentery. They are much less under combined or mixed form of anesthesia than under general narcosis. I think nausea and vomiting result to a great extent from too large doses of narcotics, as much as from the causes mentioned.

Though most patients complain of post-operative pain, this can be relieved by narcotics. Retention of urine is practically nil with surgery of the extremities as the patient can get up to void it. I think it is greater where any pelvic or rectal work has been performed.

Until we have a large series of statistics it will be impossible to determine relative frequency of pulmonary complications. I believe that these are greater after surgery of the upper abdomen. With the extremities there is very rarely any pulmonary complication.

CONCLUSIONS

1. The subject of anesthesia, local as well as general, should be taught in all medical schools.

2. The disadvantages, such as time, infection, psychic factors, etc., are more imaginary than real.

3. Careful attention to details, better knowledge of anatomy, and improved technic are essential to success.

4. The post-operative course is a better convalescence in a shorter period of time, and complications are fewer.

5. Limitations of the field should be known, and combined anesthesia should be used as soon as there is a contra-indication to any further work under local anesthesia.

6. It is not the well-organized clinics with trained anesthetists that should have knowledge of this subject, but it is in the rural districts and hospitals without consultant or visiting anesthetists.

7. The future of local anesthesia depends upon the enthusiasm of the surgeon, knowledge of the subject, and, with these, the widening of the field of usefulness.

TREATMENT OF FRACTURES OF CARPUS, METACARPUS, AND PHALANGES*

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A perusal of the recent literature on fractures of the bones of the wrist, hand, and fingers will impress the reader with the fact that not until very recently have we appreciated the frequency of these fractures. Heretofore they have been considered uncommon. This is especially true of the carpal bones. The advent of the *x*-ray is responsible for this revision of opinion, and it is due to the *x*-ray that the whole subject has received considerable attention within the past decade; however, in spite of this fact, there have been only slight modifications in the methods of treatment. These modifications have been toward a more radical form, calling for more frequent surgical interference. The general steps in the treatment of these fractures are as follows: reduction of the fracture, immobilization of parts with extension when necessary, application of massage and passive motion, active motion and restricted use, and, finally, surgery where the more conservative treatment has failed.

All or any one of the carpal bones may be fractured; usually it is only one, and this is most frequently the scaphoid. The other bones are involved in the following order of frequency: semilunar, pisiform, os magnum, trapezium, trapezoid, unciform, and cuneiform.

Two main lines of treatment receive attention in the literature. In one method, that which is most commonly employed, the fragments should first be re-aligned. This is usually not difficult, as the ligaments of the wrist are very strong and prevent marked displacement. Immediate and complete immobility should be obtained by a firm splint. Inasmuch as fractures of the scaphoid occur most commonly with Colles' fractures, the splint which is chosen for one should provide immobility for the other. Massage and passive motion should be applied. Beck recommends the use of passive and active motion as early as the tenth day; however, three or four weeks of immobility is the time allowed by most other authorities. Finally, if at this time a satisfactory union is obtained, active motion, massage, and light use is employed. A snug leather wristlet will facilitate the recovery of function. If, however, after a period of immobility of three or four weeks' duration there exists non-union, or, at best, fibrous union, motion is still limited and painful, the wrist is stiff and weak, and there exists a condition which Scudder refers to as chronic, which warrants surgical interference, Keen recommends another trial of immobility for a period of four weeks; however, the opinion is almost unanimous that the removal of a fragment or fragments is the only procedure that will improve the function of the wrist. The wrist, as referred to here, contains one or more loose fragments of bone which perform no regular function, are poorly nourished, and inflict constant irritation to the fuctionating parts. The surgical technic employed in the removal of these fragments is that worked out by Codman and Chase. It is a half-inch incision on the dorsum of the wrist, parallel with and close to the border of the extensor carpi radialis longior tendon. This incision is extended through the annular ligament and the fibrous septum between the extensor tendons of the wrist and fingers. The fragments are removed, a small drain is inserted for a day, the wrist is splinted, passive and active finger motion is started in a week, splints are removed in two weeks and light use is permitted with a wrist-band support. A good functionating wrist is the result in almost all cases, although an occasional wrist will continue to exhibit weakness and stiffness, with pain. These cases have led some surgeons to the opinion that a more radical operation will give better results. Stimson obtained good results in one case by removing the entire proximal row of bones after operation for the removal of the fragments of the scaphoid failed to improve the wrist. He suggests that it may be advisable to remove all of the first row of bones by the first operation.

The other method of treatment is that recommended by Cotton and calls for the immediate use of surgery to remove the fragments. Stimson advises immediate surgery where there is forward dislocation of the proximal fragment of the scaphoid. Scudder is not thoroughly convinced of the advisability of immediate surgery, but believes it should have strong consideration and a trial. Beck states that all cases of compound comminuted fracture should have all fragments removed. Undoubtedly, rational treat-

*Read before the Soo Association.

*Presented at the annual meeting of the Soo Railway Surgical Association, Minneapolis, December 17, 1920.

ment of fractures of the carpal bones will produce good functional results in a large majority of cases, but occasionally the most precise care will at best result in a wrist with greatly restricted function.

Keen describes three main types of fractures of the metacarpals. They are, spiral, fissured or longitudinal, and transverse. Displacement is found almost entirely with transverse fractures. In the thumb or first metacarpal there occurs a type of fracture which has been so well described by Bennett that it often bears his name. The fracture occurs near the base of the metacarpal, and is oblique from the dorsal to the palmar aspect. The shaft or distal fragment is displaced dorsally, and gives the impression of a dorsal subluxation of the metacarpal. The treatment consists mainly in immobilizing the thumb in an abducted and extended position. The Goldthwait metal splint accomplishes and maintains this position very well. Keen further advises the use of a palmar splint, which extends well beyond the end of the thumb to the ulnar side of the palm. The hand should be made secure to the splint by adhesive straps. The fingers should be allowed freedom of motion, and the splint should be changed frequently. Free use of the hand can be allowed in five weeks.

Two forms of splints are used in fractures of the other metacarpal bones. The first is a palmar splint extending from above the wrist to beyond the ends of the fingers. The hand is secured to this splint by adhesive straps. This form of a splint is advisable when the second and fifth metacarpals are not involved, as the adhesive straps which pass around the hand and splint cause a circular compression of the metacarpals, thereby displacing inwardly the loose fragments. The palmar splint is especially indicated where extension is desired. Rubber bands or tubing are fastened to the ends of the fingers by adhesive straps, and traction is secured by attaching the other end of the rubber to the distal portion of the splint, which must of necessity extend well beyond the ends of the fingers. When this form of splinting is used, pads, both palmar and dorsal, are placed over the site of the fracture. The hand should be freed from the splint frequently to allow passive motion of the fingers. The support is removed after a firm bony union is formed, but use of the hand is restricted for a five-week period.

A second way of immobilizing the metacarpals is by use of the roll or ball splint. Cotton uses a roll of bandage one inch thick and 3 to 4 inches wide. A firm pad is placed in the palm, and the hand closed snugly around the roll. Strips of adhesive plaster are securely attached to the dorsum of the involved fingers. These strips are then attached to the wrist and forearm, thus keeping these fingers snugly around the roll. Cotton recommends this splint especially when the fracture is near the knuckle. Mild traction may also be secured with this method of treatment.

When there is severe displacement Beck recommends wiring the fragments. In simple shaft fractures of the metacarpals he uses a device which allows freedom of the fingers. He places two small pieces of rubber tubing or slate pencils in the grooves along the dorsum of the hand next to the fractured bone. Tight adhesive straps force splints into the grooves and thus tend to keep the fragments in line. Fractures of the metacarpals usually give good results if reasonably treated. It is advisable to keep in mind, while splinting the hand, the necessity of giving as much freedom to the fingers as is possible, for ankylosed fingers are a far greater handicap than a poor metacarpal union.

Simple fractures of the phalanges require immobility with a single palmar splint. If swelling is marked it may be advisable to secure the fingers to each other until the swelling has reduced. The splint may be made of cardboard, tongue blade, copper wire, or heavy paper. It should be thin and narrower than the finger, and should extend from beyond the end of the finger to the wrist. The splint should be removed early to allow passive motion. Stimson uses the roll or ball splint for fractures of the phalanges, as well as of the metacarpals. He contends that a support of this kind will effectively counteract the pull of the interossei muscles.

Treatment of the phalangeal fractures is often unsatisfactory because the fragments are too small for manipulation, and because, when these fractures involve the joint, ankylosis is difficult to prevent.

There is a difference of opinion on the treatment of compound fractures of the phalanges. Cotton and Stimson believe in immediate amputation, as the very doubtful results of conservative treatment do not justify the time and expense involved. Keen and Scudder, on the other hand, are of the opinion that the slower treatment should be given a trial before amputation is decided upon.

Finally in the treatment of fractures of the bones of the wrist, hand, and fingers where there is an open wound the use of antitetanic serum should not be forgotten.

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DISCUSSION

Dr. Axel W. Swedenburg (Thief River Falls, Minn.): In a general way I would say that, in treating the hand, as compared to treating the foot, we have much the advantage because the hand can be immobilized, dressed and elevated, and taken care of much easier without discommoding the patient very much. When up and around, the patient is less nervous, and we can get along much better than when treating a foot case.

A subject not touched upon by Dr. Riegel is, that those crushing forces sometimes will fracture the bones of the hand and wrist and will set up a "stone bruise," as boys used to call it. For that reason any hemolytic infection or thrombus will set up infection. Some of us probably have seen cases of that kind in which there was no sign of infection or break of the skin.

Dr. John H. Rishmiller (Minneapolis, Minn.): The simplest method of treating fractures of the phalanges and metacarpals is always the best. One must figure out, after studying the radiograph, what means will be best to hold the fracture reduced.

Some years ago I flexed the fracture over a baseball which was placed in the palm of the hand. In recent years I have used a four-inch, ten-yard roller bandage, which has the advantage in preventing rotation of the lower fragment upon its long axis.

Laborers are the subjects of most fractures, and from their constant occupation the phalanges and metacarpals are generally bowed, conforming with the objects grasped. For this reason, it is not best to have the fractured bones absolutely straight, as produced by ordinary extension.

Fractures of the phalanges and metacarpals are generally accompanied by extensive bruises. For that reason it is always well to employ continuous mild antiseptic hot fomentations during the daytime for the first week. After the swelling has subsided, and the abrasions or lacerations, if there are any, have protected themselves by granulations from subsequent infection, then the fractured phalanx or metacarpal can be permanently reduced over a roller bandage with adhesive plaster over the dorsum of the finger. This should be kept on for two weeks,—in other words, three weeks from date of injury. During the fourth week I generally direct patients to develop the hand and fingers over a large potato in warm water, and at the beginning of the fifth week they should be able to resume their former occupation.

To make my point more clear, I desire to cite from my clinical memoranda:

Mr. L., aged 48, a car-repairer. Injured November 20, 1920. There are marked swelling and ecchymosis over the left index-finger, extending to dorsum of hand.

Radiographic examination, two views, of left hand revealed an oblique fracture, with sagging forward at the point of fracture, just below the base of second metacarpal. Applied continuous hot fomentations during daytime.

November 26: A four-inch roller bandage was applied into palm and index-finger, with other fingers, flexed over bandage and retained in flexed position with adhesive plaster, and then a wide bandage over all, thus retaining the fracture reduced.

In case of indefinite injury about the hand or wrist the scaphoid should always be considered as fractured until it is proven by the *x*-ray that it is intact. The scaphoid is one of the carpals which is most frequently fractured and must not be looked upon as an inconsequential fracture. It is generally produced under the same conditions as Colles' fracture,—that is, falling on the extended hand. The treatment is important and simple,—immobilization by anterior splint to hand and forearm. Absolute rest must be enjoined, or else an irritable wrist joint will be the ultimate outcome.

Dr. Riegel (closing): Stimson lays great stress on the use of the roll splint in fractures of the phalanges and metacarpals. He states that very frequently a fracture of this kind gives a tender finger, and especially in industrial work, for then the hand is greatly incapacitated. He says that the roll splint is far more effective in preventing this condition than any other splint he has used.

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A SERIOUS STRIKE

Society is so complex that even a slight fault in its functioning process seems like "sand in one's gear-box." Many cities in the country, including Minneapolis and St. Paul, are striving to overcome the effects of a printers' strike, because of which for the first time in many years THE JOURNAL LANCET comes out a little late, as well as somewhat reduced in size. Although we have no direct grievance with the printers, and their shaft is not aimed at us, it, nevertheless, hits us and wounds us.

About seventy commercial printing establishments in Minneapolis have declared for the so-called "open shop," that is, a place where any man with proper technical qualifications can be employed. The printers' union say their members shall not work in such shops, and the strike is on.

MADAME CURIE

The Minneapolis Journal had a very interesting editorial on Sunday, May 29th, on the discoverer of radium, in which the editor paid tribute to Mme. Curie, and spoke of her reception in this country. It did not say so, but evidently it knew that there was a possibility of Mme. Curie's stopping in Minnesota, probably at Rochester, on her way to the far West; but owing to the extreme fatigue which Mme. Curie suffered, following her strenuous receptions in the East, it is doubtful if she gets as far west as she intended to go. However, she has had a tremendously warm welcome in this country, and, incidentally, she was presented with a gram of radium by the women of the country. This radium in itself is worth somthing like $100,000.

This tribute to Mme. Curie was well worth while. *The Journal* stated that, since Simon Newcomb's death, she has only one living peer, Thomas Edison, and that she belongs to a group of scientists who, in the last thirty-five years, have changed our conception of the universe and of matter. Hertz discovered the waves of electromagnetic energy, which were named after him, in 1887; and since that time half of man's knowledge of the universe has been acquired.

Röntgen discovered the *X*-Rays in 1895. Becquerel, in 1886, discovered that the rays would pass through solids and register images on a photographic plate. Thomson, in England, in 1898, made the master discovery of electrons, and isolated these rays, in 1899.

Mme. Curie and her husband, working together in Paris, discovered polonium. And then, during her husband's absence, the wife discovered radium. This woman, then, has in her lifetime, managed, with her associates, to enlarge human knowledge to such a degree that our whole relation to the world has changed. Our economy, customs, and habits have been altered. And it is remarkable that this Polish woman, of herself, has produced greater changes than all the writers, politicians, and industrial captains of the generation together. She is now considered the greatest person in all France, measured by the effect produced by her activities. When the name of the greatest living French writer is as much a mere name as Dante, when Marshal Foch's fame is as that of Turenne or Villars, the fame of Mme. Curie will be like that of Galileo to-day, because her discovery is such as to turn the world about, so far as knowledge is concerned.

The Minneapolis Journal goes on to say: "This age, vital as it is, is a poor thing in an artistic or literary way. There may be no first-class statesmen living, or, as Lord Haldane thinks, not a single great constructive genius. But in pure science this age is wonderful, and has accomplished what will make it illustrious to the end of time. And the key to the performance, the support of the whole act, is this woman's discovery of radium."

THE RECENT MEETING OF THE MINNESOTA NEUROLOGICAL SOCIETY

This meeting was held in Rochester on Saturday, May 28th. (For further items of interest attending it read the bad-roads editorial below.) This is to deal entirely with the program of the Society. It was not only good, but well organized and interesting, and very much appreciated.

The program began wth a neurosurgical clinic at St. Mary's Hospital, at which Dr. Adson removed a cerebellar tumor, and then finished the second stage of a laminectomy for the removal of a tumor of the cauda equina,—a beautiful exhibition of a tumor lying on the spinal chord; and everyone at the clinic saw the tumor and its position. The removal of it was very easy. The diagnosis of it and the further diagnosis that a hemorrhage had occurred in the tumor, had been made previously by the staff, and the operation was performed under spinal anesthesia, administered by Dr. Gaston Labat.

At one o'clock there was a luncheon at the Zumbro Hotel for the visiting and local men. In the afternoon, in the assembly room at the Mayo Clinic, Dr. Adson read a paper on the "Injuries of the Brachial Plexus," in which he discussed the two prominent theories as to brachial-plexus injuries. The first one advanced was that all injuries to the brachial plexus were due to injuries to the shoulder-joint. The other was the suggestion of Dr. Alfred Taylor, of New York, that the brachial plexus could be injuried itself without injury to the surrounding joints; and that this theory is probable was shown by Dr. Adson in numerous lantern-slide pictures, in which he demonstrated the possibility of the tearing of the spinal roots from the spinal cord, the tearing out of the ganglion or the posterior root, or the injury of the smaller trunks of the brachial plexus by forcible action. He summarized by saying that all cases of brachial-plexus injury must be looked upon as special and individual types; that they could not be summarized under one head, either as injuries to the nerve head or to the trunks themselves.

Dr. E. C. Rosenow talked on his experiments in the production of encephalitis in animals, and he had numerous rabbits to illustrate some of the phases of encephalitis which had been artificially produced by toxins from true cases. He showed tics, cerebellar lesions, motor lesions showing invasion of motor centers, and types of nystagmus —all extremely interesting and definitely showing that there may be specific toxin, or germ or bacillus, which may produce in turn its identical picture.

Dr. H. L. Parker talked on "The Diagnosis of Tumors of the Cauda Equina, Conus, and Epiconus," and recited, briefly, the histories of eight cases, all of which had been diagnosed and operated on. There was comparatively little to say, of course, about the prognosis and the ultimate result, as they are well known to neurologists and neurological surgeons. Occasionally, it seems, an operation may be very successfully performed, and a recovery established. The majority of cases, however, do not do well.

Dr. F. P. Moersch gave many lantern-slide demonstrations of diseases, notably of hysteria, of post-influenzal encephalitic states, and other undiagnosed gross nervous diseases with bizarre movements. Dr. Henry Woltman gave an interesting historical sketch of the physiology of the nervous system.

The meeting was extremely successful, and it was well worth one's time to hear and see what can be done in the interests of neurological medicine and surgery.

The entertainment provided by the local men was not only well carried out, but formed an important part of the meeting.

BAD ROADS AND GOOD NERVES, OR VICE VERSA.

In a fit of temporary insanity (that which lasts only a few hours), the writer feels inclined to discourse upon bad roads following hard rains. With joy in his heart and the prospect of a delightful automobile trip from Minneapolis to Rochester, this temporarily unsound individual got into his car at half past four in the afternoon with every prospect of reaching his destination at eight-thirty in the evening; but he reckoned without thinking of several things. Of course, from Minneapolis to Wescott the road is perfect. At Wescott some inquiry was made as to which would be better,—to go to Rochester by the way of Faribault and Owatonna, or to take the short cut and go by the way of Cannon Falls. An obliging garage man, of whom there are many scattered through the country, informed the driver that the road for a while between Wescott and Cannon Falls was a bit slippery, owing to rains, but that after that it would be good. And, being of a trusting and optimistic nature, he chose the short cut. The road *was* slippery, and it *was* a bit rough. It had rained. But he journeyed on, hopefully and joyfully, enjoying the

beautiful green trees, shrubs, fields, and everything that made Nature laugh and grow fat. After a while he struck some good roads, and, strange to say, they were built of sand,—contrary to the biblical teaching that the man who builds his house on the sand must expect disaster. But here the roads, for a while, were very fair and occasionally good.

Passing the town of Cannon Falls, and getting out into the country for away, there was a change in the roads. They became rougher, less uniform, and wetter, until finally the wetness continued into the beautiful little town of Pine Island, where the information was received that, owing to a cloud burst in that vicinity a day or two before, the road through Oronoco was positively and absolutely impassable; that automobiles were there waiting their delivery from the mud. And the traveler was advised by one or two gentlemen who claimed to have traveled from Rochester to Pine Island the day before that the road there was very fair. And again, with confidence and optimism, the driver journeyed on for quite a little distance, at least for a few miles, when the car (seemingly an animate being) realized there was trouble ahead, and it strained its nervous system up to a point where it felt like lying down,—but, instead of that, it simply turned crosswise over the road. In front of it was a ditch and behind it a ditch, and in the middle of it mud, pure mud! And the chaffeur, a perfectly gallant gentleman, got out and struggled with the mud and the tires and chains, and eventually succeeded in getting both rear wheels properly covered with chains. And, maneuvering slowly and carefully, the car resumed its vocation and kept fairly in the middle of the road, but in the middle of the mud at the same time. And at nine o'clock in the evening we arrived at the little town of Douglas, with Rochester only nine miles away. A good deal like Sheridan's ride, surely, but muddier. After oiling up, gasolining, and watering the beast, and changing a few more tire chains, we were informed by a body of gentlemen connected with a very excellent garage that all one had to do was to cross the railroad tracks, go down by the school house, turn to the right and follow the road to its terminus, where again one should turn to the right and go a block south and a short way east, then west, and then north. You readers know what these directions mean, of course. They mean good faith on the part of the director and informer, but pessimism on the part of the driver for he knows nothing about the country, and, although all roads may lead to Rochester, this one road does not! As we neared a farmhouse, one and a half miles from Douglas, the bright lights of the farmhouse looked very tempting, and the driver inquired whether we were on the right road. He was informed by a good-looking woman, that the road was all right, and with light hearts we journeyed on about one-eighth of a mile, when we struck something, evidently a former depression in the road that had been filled up (by men or inanimate objects) with dirt taken from the side of the road, and when it was properly filled with this excellent soil, the rain of heaven poured its vengeance on it, and this is what we met: A mud puddle sixty feet long by twenty feet wide, and approximately fifty feet deep! After considering the situation for a moment or two, we concluded to negotiate it. The car was brave and willing, and negotiated about ten feet of the distance, when it stopped stock still, like "Grandfather's Clock," never to go again! Ahead of us was a sea of mud, behind us was a lake of mud, and on either side of us were several feet of mud. As the driver was already up over his shoes and socks and his lower pants in mud, he got out and investigated the situation and announced his conclusions. His opinion was that there was nothing to do but sit there all night, which we were tempted to do. In the meantime, the farmer who owned the farmhouse which was so brilliantly lighted, appeared from the opposite direction, evidently attracted by the lights of the automobile. And when he inquired what we were doing there, he was told we were doing absolutely nothing except waiting for a wind to dry up the roads so that we might get out. He argued the case in true style, and said that nothing could be done that night; that he had only a team of light horses in the barn; all the other farm horses having been turned into the pasture, and he very ably advised us to come to his house and stay for the night. After much arguing and bickering and cursing and swearing, and damning the man who built that mud puddle, we accepted his invitation. In the morning, bright and early, after a very substantial and good breakfast, the writer got into the democratic wagon that contained eight or ten milk cans, seating himself on one, while the driver of the two horses sat on another. One saw at a glance why he hesitated to offer this light team to pull out a six-thousand-pound car.

Driving in, on the milk cans, to the little sta-

tion of Douglas, the writer took an early train into Rochester, only nine miles away, where he arrived at eight-thirty,—the proper hour, but really twelve hours late. Rochester looked very good at that time, with its big buildings and hospitals and clinics, and its worn-out taxicabs. A silent prayer was offered up for the chauffeur, who had charge of the car. He and the two men brought out four big farm horses, who gallantly struggled to get out the machine. So great was their endeavor, and so strong their pull, that all of them fell to their knees,—whether in prayer or on account of the slippery mud, or whether the car was so heavy it could not be moved was a moot question. However, after an hour or so the car was through the puddle and on its way to Rochester, where it arrived without injury, and was washed and clothed and again put in its right mind.

Discussion arose among some of the men attending the meeting as to whether that road was better than the other, or whether the Owatonna road to Rochester was equally bad. At all events, one of the men informed the writer that his car was in Zumbrota, seventeen miles away, and that it had already cost him a hundred dollars. The men who went down to Rochester through Farmington and Dodge Center got through after seven hours' driving, and they declared with considerable emphasis that the road between Owatonna and Rochester was very bad, but the writer had the best part of the story; he knew the road he came over was extremely bad. However, everyone got through, and at four and five o'clock we all left Rochester and journeyed homeward. Strange as it may seen, the men who went by the way of Owatonna went back by the way of Cannon Falls, while the men who went by the way of Cannon Falls went back by way of Owatonna, and, on arriving at home, each declared that the road was perfectly good. Between Rochester anad Owatonna there was not a mud puddle. They had scraped the road with the exception of two or three miles, and made it extremely passable. The men who went by the way of Cannon Falls declared that they had no trouble in negotiating the roads to St. Paul and Minneapolis. The writer hesitates, but declares that it is almost impossible to accept their statements, except for the fact that he found the road between Rochester anad Owatonna good, and they found the road good the other way; all, of course, due to the fact that the sun had burned down on the roads from all directions and dried them,—and apparently everyone was satisfied.

This road business is a serious proposition, and the men who travel over muddy roads and then tell you, as you are passing by, that the road is fair, are subjects for criticism, if not for forcible detention. But the supervisor who will fill in a cut with clay and without the cutting of small trees or filling in with rock or gravel, is a man to be utterly despised. He knows nothing about road-building unless he stops to consider that the Lord sends the rain on the just and the unjust; and, if he were only in the middle of his own filling when the downpour comes, he might be excused, otherwise he has no excuse whatever.

In spite of all the sympathy with the bad or good roads, the writer feels like exclaiming with some previous poet:

"Post hoc, propter hoc. Hell and damnation!"

NEWS ITEMS

Dr. F. W. Calhoun, of Albert Lea, has gone to Europe.

Dr. W. W. Brown, of Marshall, has moved to St. Bonifacius.

Dr. O. F. Flores has moved from Claremont to Dodge Center.

Dr. Ivan Linsin has moved from Tioga, N. D., to Bottineau, N. D.

Dr. H. D. Newby has moved from Sioux City, Iowa, to Parker, S. D.

The Mankato Clinic has plans drawn for a clinic building to cost $175,000.

Dr. B. S. Allison, of Madison, S. D., has been doing postgraduate work in St. Louis.

Dr. Wallace H. Cole, of St. Paul, was married last week to Miss Mary B. Crunden, of St. Louis, Mo.

Dr. T. A. Estrem, of Hibbing, was married last week to Miss Violet Toms, of the same city.

Dr. H. Hannum has moved from Bayfield, Wis., to Muskegon, Mich., after practicing for many years in Bayfield.

Dr. A. W. Powers, of Fountain, died on May 29th, at the age of 71. Dr. Powers had practiced at Fountain nearly fifty years.

Dr. L. F. Sutton has moved from St. Paul to Mazeppa, where he takes up the practice of Dr. W. B. Haegerty, who will go to California and perhaps locate there.

Dr. William F. Wild, of the Mississippi State Board of Health, was elected, last month, executive secretary of Minnesota Public Health Association.

Dr. R. J. Critchfield, of Minneapolis, is doing substitute work for Dr. Johnson, of the Buhl Hospital at Buhl, while Dr. Johnson is taking a course of treatment at Rochester.

The Deaconess Hospital at Mountain Lake, which cost $75,000, was dedicated on June 5 without a dollar of indebtedness. Dr. J. P. Hiebert, of Minneapolis, formerly of Mountain Lake, made the dedicatory address. Drs. James of Mankato and Sogge of Winona also gave addresses.

Dr. Elizabeth Rindlaub, of Fargo, N. D., was elected president of the North Dakota Academy of Ophthalmology and Oto-Laryngology at its annual meeting last month. Dr. A. Carr, of Minot, was elected vice-president; and Dr. G. Golseth, Jamestown, was elected secretary-treasurer.

The Minneapolis General Hospital has just graduated the largest class of nurses in its history. The class numbered thirty-four nurses. Dr. R. O. Beard, or the University Medical School, delivered the principal address at the graduation exercises. Other hospitals in the city graduated large classes this year.

At the annual meeting of the Winona General Hospital, of Winona, held last month, Dr. Donald B. Pritchard, the secretary, announced the gift of $50,000 to the endowment fund and a gift of $5,000 toward the $30,000 fund needed for improvements. Such gifts are an encouraging sign for, larger hospital gifts in the West.

The Northern Minnesota Medical Association held its annual summer meeting at Detroit, Minn., last month. The meeting was largely attended, and a number of distinguished outside physicians gave addresses. This association should be a worthy rival of the Southern Minnesota Association, which is second to no other society in Minnesota.

Dr. Henry Smith, of India, famous the world over for his operation for cataract, will be in the Twin Cities next week, and will hold a clinic in St. Paul under the auspices of the Minnesota Academy of Ophthalmology and Oto-Laryngology on the 22d instant. Dr. Smith comes to the Northwest as the guest of Dr. John C. Harding, of St. Paul, who visited him in India.

Dr. Fred Ewing, in his presidential address before the annual meeting of the North Dakota State Medical Association, hit a popular chord in both the title and the context of the address. He spoke on "The General Practitioner," and hit the high spots of his career. Many papers of the Northwest have commented upon his address, and al genera practioners wil l be especially pleased with it. We expect to publish it soon.

Dr. Robinson Bosworth, of St. Paul, who is the executive secretary of the State Advisory Commission on Tuberculosis, with a salary of $4,250, and has also been acting secretary of the Minnesota Public Health Association, with a salary of $3,600, has been accused of holding two public offices and drawing two salaries. Dr. Bosworth replies, and very properly, that the latter association is not a State body. It masquerades under a name that makes it appear as such, and this is wrong.

Dr. H. E. Robertson, who has a national reputation as a pathologist, has resigned from the staff of the Medical School of the University of Minnesota to accept the position of pathologist on the staff of the Graduate School of the Mayo Foundation. This action, of course, takes him to Rochester, opens to him a larger field for research work, and gives the benefit of his large abilities to the advanced students who take graduate work in the University School. His career there will, no doubt, be a brilliant one.

The annual meeting of the South Dakota Association, held at Aberdeen last month, was one of the best in the Association's history, and the attendance was practically the same as last year in spite of the fear that it would be much smaller. The following officers were elected: President, Dr. George S. Adams, Yankton; first vice-president, Dr. G. G. Cottam, Sioux Falls; second vice-president, Dr. F. E. Clough, Lead; third vice-president, Dr. R. L. Murdy, Aberdeen; secretary-treasurer, Dr. F. A. Spafford, Flandreau. Newly elected councillors were as follows: Second district, Dr. A. E. Johnson, Watertown; seventh district, Dr. F. I. Putnam, Sioux Falls. The constitution recommended by the A. M. A., with a few changes to meet local conditions, was adopted.

At the annual meeting of the North Dakota State Medical Association, held last month in Fargo, the following officers were elected: President-elect, Dr. E. P. Quain, Bismarck; first vice-president, Dr. W. C. Fawcett, Starkweather; second vice-president, Dr. J. H. Rindlaub, Fargo; secretary, Dr. H. J. Rowe, Lisbon; treasurer, Dr. J. F. Aylen, Fargo; delegates to the A. M. A., Dr. A. J. McCannel, Minot, and alternate, Dr. P.

H. Burton, Fargo; committee on medical education, Dr. H. E. French, University; Dr. H. H. Healy, Grand Forks; and Dr. G. J. McIntosh, Devils Lake; committee on medical defense, Dr. Fred Ewing, Kenmare; Dr. C. N. Callander, Fargo; Dr. E. A. Pray, Valley City; Dr. H. O. Altnow, Mandan; Dr. R. W. Pence, Minot; and Dr. H. W. F. Law, Grand Forks; recommended to the governor for appointment on the board of state health and medical examiners,—Drs. H. G. Woutat and G. M. Williamson, Grand Forks; and Dr. V. J. LaRose, Bismarck; councilors,—Dr. Charles MacLachlan, New Rockford; Dr. E. M. Ransom, Minot; Dr. F. L. Wicks, Valley City; and Dr. L. G. Smith, Medina. The 1922 meeting will be held at Minot.

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A high-grade woman assistant with years of experience in office nursing, stenography, bookkeeping and routine laboratory work, wishes position with a doctor having a large general or surgical practice in Minneapolis. Address 145, care of this office.

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A Jones Metabolimeter with oxygen tank, used a few times. Address 149, care of this office.

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THE PSYCHOLOGY OF TRAUMA

By Dr. Arthur Sweeney, M. D.
ST. PAUL

It is the purpose of this paper to consider the difference between traumatisms in which there is no liability on the part of a public service corporation and those in which compensation is claimed. It is proposed to compare, in its results upon the patient, the difference between physical and psychical shock. I shall endeavor to explain why the person who receives severe physical injury suffers slight and transitory psychical shock, and why the person whose physical traumatism is trifling exhibits a high degree of psychical disturbance.

The question involved is a very important one to those who have occasion to deal with railway and other injuries. The phenomena of traumatisms are very little understood, and mistakes in diagnosis and prognosis are very frequent. It is very disturbing to the physician to find that his gloomy prognosis at the trial of a case is confounded by the rapid and complete disappearance of serious and alarming symptoms shortly after the litigation has terminated. After a few experiences of this nature the physician is apt to become skeptical and to become unjustly hostile to all persons claiming to be injured. I shall endeavor to show that such skepticism is largely without reason, and that, except in cases of malingering, the patient is, to a large degree, the victim of a psychical state which is, to a certain degree, the consequence of the conditions surrounding him rather than voluntary misrepresentation and exaggeration.

I shall demonstrate that, while the symptoms of the majority of litigable traumatisms refer to the spinal segments rather than to psychical disturbance, as a matter of fact they are of a mental character, either immediately or remotely, and persist or get well according as the mental state is influenced favorably or unfavorably.

I shall not, except incidentally, refer to gross traumatisms of the back, such as fracture of the vertebræ, lesions of the cord due to hemorrhage or pressure, fractures of the ribs, disturbances of the sacro-iliac joint, whether demonstrable or not, nor to cuts and gross lesions of nervous or muscular tissue. I shall confine myself in the main to those injuries to the back which present few or no objective symptoms, but many subjective complaints of pain, tenderness, numbness, weakness, nervousness, sleeplessness, anesthesia, depressed physical and mental conditions.

It is a remarkable but incontrovertible fact that persons receiving severe physical injury almost never suffer from subjective symptoms of this character. The person who, in a railway accident, has broken legs or arms, suffered severe lacerations of tissue or crushing of the members of the body which require surgical measures, rarely suffers from the subjective symptoms seen in "litigation spine." On the other hand it is of common experience that the person who escapes from a wreck with nothing more than a few superficial bruises and abrasions, suffers very severely from the symptom complex of neurasthenia and hysteria. It has come to be almost axiomatic that the greater the physical damage the less the psychical shock, and, conversely, the less the physical injury the greater is the psychical disturbance.

This singular paradox requires explanation. The explanation is not easy unless one considers the psychology of the matter. The one who

receives serious physical injury suffers from physical shock at the time. The pain, the loss of blood, the dilation of the abdominal blood-vessels, and the lowering of the nephritin content of the blood which accompanies the nervous irritation, produce a physical prostration, which for the time being reduces to a minimum the mental function and emotional capacity, which otherwise would play a large part in the production of subjective symptoms. After the shock is over and the system has responded, it adjusts itself to resistance to the actual physical pain. The mind during the first three or four days is occupied by realities which are so imperative that it cannot bring itself to the consideration of anything else than the purely unemotional matter of overcoming the pressing physical symptoms. After the first effects of the traumatism have quieted, the conditions presented are definite and in no sense speculative. There has been a certain definite physical lesion attended by certain positive symptoms. The results are definite. The arm is broken and will get well within a certain period; the arm has been amputated and the loss can be definitely calculated; the arm has been crippled and impaired in its usefulness to a certain ascertainable extent. In other words, the injury, its cure, its consequences are definite, and nothing is speculative. Such emotional disturbance as is manifested is measured by certain definite and positive conditions, and little is left to the imagination. In these cases emotion rarely outruns reason.

The litigation features are equally definite. There is, or there is not, a liability on the part of the offending corporation. The loss of function by reason of the injury is not a matter of doubt. The time to be spent in recovery is relatively definite. The loss of wages can be calculated. The amount to be expended for physicians' fees and hospital and other expenses can be arrived at by simple means. The diminution of earning power by reason of the injury can be ascertained. All the factors attending litigation are objective and concrete. They are easily comprehensible to lawyers and juries, and nothing is to be gained by exaggeration, by pretense, or by malingering, because the facts of physical injury are easily understood by the man of ordinary common sense.

With the group of symptoms which I have called by the name of "litigation spine", nothing is definite, positive, or comprehensible by the ordinary man of common sense. Pain in the back is usually of a very severe character, localized, not radiating along the course of the nerves, but especially severe over the tips of the spinous processes. While the pain is localized it is not always in the same exact location, but varies over a range of two or three vertebræ at the same examination. When it involves the lumbar muscles it is constantly present in mild degree, but increases on exertion. When in the sacral region it is, as a rule, diffuse, the tender spots being variously located, at the sacro-iliac junction, over the mid-sacral region, and at the tip of the coccyx. The character of the pain is such as to suggest a psychical rather than an organic origin, and is described with an expression of exaggerated agony and a facial contortion of suffering not met with in organic disease. When attention is diverted by questions as to other symptoms the emotional display quickly shifts to the symptom under discussion, and the latter becomes for the moment the all-important feature. In organic spinal disease there is never any exaggeration nor excessive emotional display, but the pain is a factor of constant quality that does not become subordinated to other associated symptoms. The symptom of tenderness follows the above rule.

Numbness in the back and legs is also a variable symptom in this condition. There is always a vagueness in the description of numbness which leaves one in doubt as to whether it is prickling, tingling, dead feeling, or a burning sensation. Usually the examiner by adroit questioning can lead the patient to describe the sensation as at first one and then another of these forms of sensation. The numbness is also inconstant, in that it is not always present. It extends to regions not along any particular sensory distribution, and also is different in character and location at various examinations.

Anesthesia is an inconstant symptom. It is almost never discovered by the patient, but is brought to light by the examiner. It is inconceivable that a person with complete loss of sensation to pain, touch, and heat should never have discovered it until, under the very suggestive methods of neurological examination, the anesthesia is brought to the consciousness of the patient. In my work among these cases I never test for anesthesia until after a lapse of a couple of months, during which the patient, though paralyzed, makes no complaint of lack of sensation. If not on my first test, invariably on the second one, I develop a characteristic hysterical anesthesia. The distribution of this sensory loss is characteristic. It is circular rather than longitudinal in its distribution. The loss of sensation

is of the stocking variety, or involves both legs to the groin or to the umbilicus; or it is of the hemianesthetic type, involving one entire half of the body. Its limits are not constant. When the test with a sharp instrument is carried from below upward, and the limit of loss is marked with a grease crayon, it is found to be at a higher level by from one to four inches than when the test is made from above downward. This inconstancy of limit is quite characteristic of "litigation spine." These patients readily accept suggestion from the physician when to their minds it seems to favor their case and tends to increase the apparent severity of their sickness. I have frequently inquired, with an air of expectancy of an affirmative answer, whether in cases of functional paralysis of the leg they do not often experience pain behind the ear or in the ulnar distribution of the hand, and I almost always find that it is afterward a constant symptom, although having no connection whatever with the original complaint.

The paralytic conditions met with in "litigation spine" are always of the extreme type. The paresis so frequently met with in organic disease has no place in this symptom complex. The grasp, registered upon the manometer, is nil, although during the test the flexor and extensor muscles of the arm and wrist are contracted with a force that is difficult to overcome. When the leg is paralyzed it is completely out of use. Not only are the extensor and flexor muscles of the leg helpless, but the intrinsic muscles of the hip are disabled, producing an elongation of the leg, which compels the patient to drag the member behind him as a flail, wearing out the point of the shoe. Such patients one can see on the way to the physician's office, slowly progressing on crutches with the leg dragging helplessly behind them, the toe scraping the pavement. It is a spectacle that excites the pity of the passer-by, but to the physician who is familiar with the symptoms it spells litigation.

As to the nervousness, sleeplessness, and other associated subjective symptoms, they, too, are inconstant, in that they depend on the statement of one whose interest is served by over-statement or exaggeration. The patient complains of insomnia, yet when the nurse makes her night report the chart usually says "slept well." These subjective symptoms when submitted to the analysis of disinterested observation fail to materialize in the vast majority of cases. Inasmuch as the fixed attention of the patient on his symptoms is largely the producing factor of these conditions, observation of him when his attention is diverted by pleasurable attractions often shows a freedom from nervousness entirely inconsistent with the statement of the patient.

In addition to the indefinite and inconstant character of the symptoms, we must not be unmindful that their prognosis is also an indefinite factor. When we speak of psychical conditions we do not always understand just what we mean by that expression. While in hysteria and allied neuroses we use the word "physical" as a clarifying expression, do we really add much to the understanding of the problems involved? Do we not rather evade our responsibility and cease trying to understand the causes that produce the symptoms? In this particular relation the psychic processes are simple of explanation and comprehensible by the use of ordinary common sense. If we start with the conception that human beings are very similar and are actuated by the same mental processes, fears, motives, and emotions, we will find that the mental processes of the one with "litigation spine" are not very different from what our own would be under the same conditions.

Given an accident in which no severe bodily injury is received, but in which slight bruising is attended by the fright shock that surrounds most railway injuries, we have conditions that easily and naturally lead to an emotional hyper-excitability. There is no physical shock to depress the activity of the nervous system, no loss of blood to exhaust the strength, no unconsciousness to modify our susceptibility to impressions, and no actual pain to absorb our attention in a concrete manner. Consequently our emotional nature is wide awake and impressionable. There is an acute perception of the surroundings of the accident, a vivid realization of the horrors of other peoples' injuries, an active consciousness of what might have happened, and a sense of self-congratulation on the narrowness of the escape. To pass through such an occurrence without experiencing fear would be practically impossible, unless one has his emotional nature well under control.

After the accident it is discussed with relatives and friends. The details are described with infinite precision. Its horrors are depicted with lurid description. The victim, already shaken by the primary emotional shock, is further shaken by the sympathetic and ill-judged curiosity of relatives and friends, who ply him with questions and remarks which tend to fix upon his mind the

unpleasant details of what has happened. He goes to bed, but sleep deserts him, and he acts the scene all over again in the restless hours of the night.

At this early period two emotions possess him. One is fear, which from the start has dominated him. The other is resentment, gradually increasing against the negligence which allowed the accident to happen. He begins to feel that "they" had no right to allow the condition causing the accident to exist. "They" had no right to jeopardize the lives of their passengers. These emotions now begin to be accompanied by certain physical symptoms. The head aches, and there is a nervous feeling down in the spine, later to be replaced by pain and tenderness. There are physical weakness, a sense of mental fatigue, and a tendency toward irritability and lack of control of the feelings under expressions of sympathy. After a few days these symptoms become pronounced, and the patient is reduced to the more or less marked condition of neurasthenia so often met with.

About this period the claim agent makes his appearance, and talks in a friendly way about the legal aspects of the case. He is too friendly, and the sick man fears a trap to inviegle him into some statement unfavorable to his case; or he is too abrupt and offensive, and in this he sees a practical denial of liabiliy for his injuries, or an assertion that they do not exist, at least in the degree claimed. The visit of the claim agent is attended by one or two of these emotions. Henceforth his attitude is one of hostility. There is subconscious reassertion of the reality of all the symptoms. Not only are they real, but they are severe, more severe than at first thought. They must mean something radically wrong with the system. "Why should I feel so badly unless I have something seriously wrong with me? Do not these pains, headaches, numbness, and weakness mean some organic condition from which I may perhaps never get well? Why should I sleep so poorly, dream so much, and awake so unrefreshed?" This is the period of apprehension, in which the patient lives in a condition of uncertainty as to the outcome, tinctured with the certainty that the outcome, whatever it may be, will be bad. So far, we have to deal only with fear and resentment, suspicion and apprehension; other emotions, perhaps less innocent, are to follow.

Now come thoughts about compensation. How much? The condition has dragged its weary length for several weeks, and the symptoms are now well developed and established. How much is adequate compensation? That depends! Will I recover? When will I recover? Will my recovery be complete? Will I ever be the same man again? Who is going to pay for my loss of time? My expenses are large, and they must be met. Will I be able to get my job back? Will these symptoms not be liable to recur when I go back to work? The compensation must be adequate for my losses in the past, for my losses in the future, and for all that I am suffering and have suffered. The mental attitude now becomes hostile. They must pay—they must pay well. But how much? How can I tell until I get well? How can I tell how much time I will lose or how much my expenses will be How can I settle until I know how long I am going to be sick? The thought that comes at this time is, the longer I am sick, the more they will have to pay. Why should I hurry to say that I am well? And so attention becomes fixed on symptoms. Daily self-analysis prolongs the condition, and the mental state, influenced consciously or unconsciously by cupidity, becomes stationary, and no effort is made by the patient to arouse himself from his morbid, emotional condition.

So the condition drags on. Cupidity has now become the ally of fear, resentment, suspicion, and apprehension. Self-analysis increases the suffering. The patient daily compares his present state with his former one, and each anaysis increases his certainty of the severity of his condition and warps his judgment of fairness and equity. He has acquired a morbid mental habit, which leads to exaggeration, typical of the traumatic neurasthenic, and he becomes a nuisance to himself and to all about him.

At this period or earlier he receives a visit from a friend of a lawyer, who has recovered prodigious verdicts in cases not half as bad as his. He shows him photographic reproductions of checks in settlement of verdicts obtained by the legal luminary in other cases. If he can do it in these cases, why cannot he recover a larger amount in this much more serious case? Would he not just talk with the lawyer and let him tell what he could do for him? And finally he signs a contract giving 50 per cent of the prospective damages to the lawyer.

After the client is fairly hooked, the lawyer does not apparently hurry toward the settlement of the case. The law's delays are many, and in the months in which the case drags the symptoms

might naturally disappear. And they do frequently disappear, but the plaintiff cannot now afford to admit it. He must go on, after his condition has largely disappeared, claiming still to suffer with the acuteness of the first few weeks. He cannot now afford to admit that he is well. If he improves, he diminishes the amount of compensation he will get. He continues to complain and to exaggerate. The phase between exaggeration and malingering is like that between daylight and darkness: one cannot tell when the one leaves off and the other begins. He is, however, susceptible to adverse suggestion, and under the mere suggestion of the attorney weakness becomes paralysis, frequency of urination becomes incontinence, and the picture of neurasthenia gradually begins to merge into that of organic disease.

Before trial he must be examined by the defendant's physicians. He realizes that it is a test of wits. He is alert and clear minded, fencing shrewdly for advantage in the description of subjective symptoms, at no time admiting any improvement, and insisting on a detailed description of the severity and reality of all that he has suffered. He is not to be caught off his guard, and he reinforces his statements by appropriate facial expressions, indicative of the severity of his pain. His back pains him, and every movement is guarded by rigidity of the erectores spinæ. His leg is helpless, and he allows pins to be stuck into it without flinching. He acts the part as naturally as he can, and he sticks by the assumed symptoms with as great vigor as by those which were in the early stage the real ones. His sickness is not now a mere malady. It has become a battle—a contest in which there is a prize to be won by shrewdness and determination; and in which he realizes he has an advantage before the jury.

After the verdict, which is seldom as large as his cupidity desires, he has at last something definite to look forward to. So has the lawyer. If the case is appealed he cannot afford to get well before the next trial, and he keeps up the appearance of invalidism, as best he can, long after his symptoms have ceased to be real and when memory of past sufferings have to be galvanized into actuality by forced imagination. He is weary of the struggle, but cannot give in. If the case is promptly settled after the verdict the conditions are different. He has won! The moral effect of this cannot be underestimated. Unacknowledged, he has been waging a battle, and he has had a victory. At once the mental state changes. From one of fear and apprehension, it has changed to optimistic certainty. All doubts are dispelled. He can now free himself from the morbid mental habit of months and can think of happier things than pain and suffering. The mind is absolved from the resentment which it has secretly entertained for months. The antecedent depressing conditions have disappeared, and he can calmly look forward to returning to work and resuming his normal life.

In these cases of "litigation spine," miracles occur. Sometimes sudden recoveries folow the verdict; at other times there is a gradual adjustment to normal life, a gradual using of long disused muscles, a gradual acquirement of function in long-idle joints. Pain, dependent from the beginning on psychic conditions, gradually or rapidly disappears, as abnormal ideas are replaced by normal thoughts. It is rare that pain persists in these cases after the mental atmosphere has been cleared. Tenderness, numbness, anesthesia, and the other purely subjective symptoms disappear, and with the upbuilding of the general muscular strength the patient is soon well.

I believe that this analysis of the psychology of "litigation spine," while subject to modification in special cases, will be found to be generally accurate. It describes the state of mind found in these cases, which is responsible for the most extraordinary symptom complex met with after slight traumatisms. It is based largely on that human nature which is common to us all. All of us protest that under conditions of traumatism we would not be actuated by the unworthy motives described above. We claim to be superior in our emotional control and in the purity of our motives to these sufferers from "litigation spine." Is not, however, our boast of emotional control a pure assumption? I maintain that all of us would be likely to react to the same conditions in a similiar manner. We would probably admit the existence of fear, of resentment, of apprehension, of suspicion, but we deny that cupidity would influence us in any degree. Perhaps our characters are better and stronger than those of our neighbors, but I have my doubts.

I am not unaware that many cases of hysteria and of simple neurasthenia are not influenced by all the emotional processes here described, and are of the pure type. I have also intentionally excluded from consideration in this connection those gross injuries of the back in which demonstrable damage is done. I will not deny that even

in fractures of the bones and lesions of the cord and other gross injuries to the body, fear, suspicion, resentment, and cupidity may be leading emotional traits, but they do not have the same peculiar psychical effect in establishing a definite symptom complex, such as exists in "litigation spine." The person who has an organic paralysis may also be dishonest or self-deceived, but his mental state is entirely different from the bizarre psychology of the one with "litigation spine," and can be adequately dealt with.

I have tried to paint a picture that will properly portray the psychical state of the litigant. From my experience with this class of cases I am persuaded that the victim of "litigation spine" is suffering from a morbid mental state. The symtom complex is unique. It corresponds to no organic condition. Its cause is in the emotions; its cure is in financial compensation.

When these people fall downstairs in their own homes, they nurse their bruises and get well. When they meet with an accident with a legal liability attached, they do not get well until they have received monetary satisfaction. It is the part of the physician, recognizing the psychology of the condition, to be optimistic. Much harm is done to the patient, as well as to the reputation of the physician, by too readily accepting subjective symtoms as indicative of organic disease. It is wise that our sympathies in these cases should not go to the point of encouraging the idea that the condition is serious or that the prognosis is unfavorable. The attitude of the physician should be impartial. Recognizing that it is an emotional product he should not allow his judgment to be swayed by sympathy or by interest. He should have no interest in the financial outcome of the case, and his position should be one of absolute impartiality. Above all he should be clear in his diagnosis and should not accept any case as organic without definite objective symptoms.

FUNCTIONAL TESTS IN ENDOCRINOLOGY*

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Among the numerous fields of investigation which are of especial interest in present-day medicine, two are particularly conspicuous: first, the development of functional tests, or studies in physiological pathology; and, secondly, the whole subject of the structure, physiology, and pathology of the glands of internal secretion. It is only natural, consequently, that students in the field of endocrinology should have devised various functional tests to supplement the all-too-limited data which at present comprise our almost embryonic knowledge of the glands of internal secretion. It is with the three most important of such functional tests,—the estimation of the basal metabolic rate, the estimation of the sugar tolerance, and the so-called Goetsch, adrenalin-chloride test,—that the present paper is concerned.

Before taking up each of these three endocrinological tests, however, it seems worth while to consider, in passing, certain aspects of functional tests in general, and as related to the three functional tests in the endocrine field with which we are here more immediately concerned.

In general, functional tests are of particular value in two situations: first, in conditions in which the pathology is definitely known, but in which it gives little accurate data concerning function; and, secondly, in conditions in which the pathology is as yet obscure. As an example of the first case we may take valvular cardiac disease. Nothing, we take it, need be clearer than the pathological picture which we possess of the various valvular lesions. Nevertheless it is a courageous prognostician who commits himself very definitely as to just how much wear and tear any valvular lesion,—say, a particular mitral stenosis,—will ultimately weather. At present there is no functional test in this condition which is of definite value in estimating functional capacity, but it is clear that progress here lies in the field of functional, or dynamic, rather that pathological, or static, studies.

Even more essential are functional tests in those fields where the pathology is still obscure, —the present status of much in endocrinology. One need cite only diabetes mellitus. Pathology is usually, though not always, found in the islands of Langerhans. But our only real conception of the severity of functional prognosis of any given

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diabetic case lies in the study of metabolic function, knowledge of which cannot be derived from the pathological picture. And in diabetes insipidus, functional information is the only type we possess. In the field of endocrinology, then, where most of the pathology is still undetermined, functional tests should be of particular value.

All functional tests—and this applies to these three functional tests in endocrinology, as well—may be divided into three categories, according to which they may be expected to possess greater or less value. In the first group may be placed studies of the activity of an organ or group of organs in a physiological process,—that is, a functional activity which occurs normally. In contrast to this is the second group, in which is studied the functional response to a process which is not physiological or normal. Between these extremes lies the third group, in which the test is of a physiological function, but produced in a manner not normally occurring in the organism. Each of the three endocrine tests which we shall discuss falls into one of these three classes, as we shall see.

Typical of the first, or physiological, class, though not ordinarily thought of as a functional test, may be cited the simple taking of temperature, in which the function of maintaining in the organism the physiological heat-regulating equilibrium is observed. Another is the estimation of the carbon-dioxide combining power of the blood plasma, in which is observed the functional capacity of the organism for maintaining its normal acid-base equilibrium. In the field of endocrinology we have, similarly, the estimation of the basal metabolic rate, in which is observed the physiological function of the organism in regulating its exchange of energy.

Characteristic of these three examples of tests of physiological function and many others, such as leucocytosis, respiratory rate, vital capacity, gastric chemistry or concentration of blood metabolites, might be cited are two points. In all the functional tests which fall into this first, or physiological, category, two conditions obtain: first, a definite physiological or normal standard, in quantitative terms, has been established; secondly, any definite quantitative deviation from this known standard indicates functional abnormality. Thus, taking into account where necessary certain constant variations for age, sex, weight, or surface area, there have been determined definite, constant, normal standards of temperature, acid-base equilibrium, concentration of blood metabolites, pulse-rate, concentration of the various blood corpuscles, basal metabolic rate, etc. These standards of normal function are known with a fair degree of accuracy; consequently any definite variation from the established normal standard in any of these fundamental functional equilibriums, so to speak, enables us to say: "Something is functionally wrong in this organism." The finding of certain of these functional abnormalities may help to localize a disturbance—for example, a lowered carbon-dioxide combining power of the plasma or a diminished vital capacity. Several of them together, such as temperature, pulse-rate, and leucocyte count, may combine to contribute considerably to an ultimate diagnosis.

In the field of endocrinology, the estimation of the basal metabolic rate appears to be of just this fundamental value. Just as the temperature alone cannot tell you that a patient has, let us say, pericarditis, but is of value in telling you that there is something abnormal in the patient, and that this abnormality lies almost certainly in the field of infection; similarly, the basal metabolic rate, in a patient in whom other findings are negative, does not tell you whether or not he has Graves' disease, or dyspituitarism, or what-not, but it does, if abnormal, tell you that there is something fundamentally wrong with the patient, and that the difficulty lies somewhere in the troubled regions of endocrine function. This is the most important, if least emphasized, value of the basal metabolic rate. It helps divide, as it were, in the endocrine field, the physiological sheep from the pathological goats. Apart from its usefulness in certain definite conditions, this fundamental information of functional normality or abnormality which the basal oxygen consumption determination gives is of the greatest importance. In any condition in which definite findings are few and the diagnosis obscure, the estimation of the basal metabolic rate is indicated. A normal metabolic rate, of course, does not exonerate the endocrine glands—conditions undoubtedly endocrine, such as diabetes mellitus, dyspituitarism, or gonadal dysfunction, more often than not give normal rates. Nevertheless, a consistent deviation of the metabolic rate, either below or above normal, definitely implicates the function of the endocrine system, and should lead to a thorough investigation. This,

of course, is in the absence of an increase in temperature, and only when the observations have been verified by an experienced observer using an accurate method. Any instrument which enables the diagnostician, at the bedside, to read off on a scale the metabolic rate and the corresponding diagnosis, is to be looked on with the same suspicion as the old-time urometer. on which, opposite the specific gravity, the practitioner found the renal diagnosis.

Apart from this fundamental information obtained from the basal metabolic estimation, there are certain conditions in which it is of more definite and more generally appreciated value. These conditions are expressions of abnormal function of the thyroid gland. The fact that this functional test has been limited so largely to thyroid dysfunctions is only partially to be explained by the fact that thyroid diseases are relatively more common than other dysendocrasias. It must be remembered that more work has been done on the thyroid than on all the other glands of internal secretion together; and what is of greater significance, through the brilliant and important researches of Kendall,[1] the active principle has been isolated, so that its chemical properties and action in the body have been studied. Only the future can tell whether or not the metabolic rate will be of predominant value in thyroid states, or whether, ultimately, isolation of the active principles of the various other endocrine glands will show that each has an equally specific and important function in maintaining metabolic equilibrium. Also, the thyroid is the only endocrine gland lying near the surface of the body, where a pathological condition causes gross morphological changes that are more or less conspicuous.

The significance of the basal metabolic rate in thyroid disease is fully set forth in the recent literature,[2] and need not be discussed here. We may enumerate its use in the following conditions:

1. In estimating the functional activity of the gland at any particular time, and following the course of its activity from time to time.

2. In showing the effect of rest, diet, drugs, ligation, thyroidectomy, or other forms of therapy.

3. In suggesting the type or degree of operative procedure.

4. In the diagnosis of hypothyroid states—myxedema and cretinism.

5. In differentiating Graves' disease, toxic adenomata, and non-toxic adenomata from one another.

6. In differentiating the tachycardia, weakness, and fatigability of hyperthyroidism from similar symptoms due to tuberculosis, focal infection, or neurasthenia.

ESTIMATION OF SUGAR-TOLERANCE

In this country the estimation of sugar-tolerance as a functional test in endocrine diagnosis received its start from Cushing,[3] who claimed that diminished function of the posterior lobe of the pituitary gave an increased tolerance for carbohydrates and was a characteristic feature of the syndrome *dystrophia adiposa genitalis*. This conclusion he based upon certain experiments on dogs,[4] in which the posterior lobe of the pituitary had been removed, which were given sugar by mouth till glycosuria appeared. The same method was then followed in patients with pituitary disease.[3] Cushing appears to have come to his conclusion on insufficient grounds. He never established any definite standard of normal tolerance in either dogs or men, nor did he attempt to discover whether or not the increase in tolerance which he claimed typical of posterior dyspituitarism, was to be found in any other condition. Cushing's conclusions have been largely supplanted by later workers, notably Woodyatt and his collaborators.[5]

Estimating the sugar-tolerance of an organism is not so simple a procedure as one might suppose. To be accurate, sugar-tolerance estimations must control all of at least the following variable factors: the emptying rate of the stomach, the rate of intestinal absorption, the rate at which equilibrium is established between the blood and the tissues, and the level at which the blood-sugar is excreted by the kidneys. Any conclusions, such as Cushing's, based on the observation that a given amount of glucose by mouth causes glycosuria, must be taken skeptically. If the stomach empties slowly, due to spasm or obstruction, or if the intestine absorbs slowly, an indefinite amount of glucose—up to the level of the gastric tolerance—may be taken by mouth without causing glycosuria. If the renal threshold for glucose is high, as in certain types of nephritis, the blood may retain an increased amount of sugar without sugar overflowing in demonstrable amounts in the kidney.

More recent observers have not failed to realize these difficulties, and the later studies in

sugar-tolerance have, consequently, been directed for the most part along two particular lines: first, the development of a technique which will eliminate the above-enumerated factors of error; and, secondly, the establishing, by physiological methods, of a definite, fixed standard of carbohydrate tolerance in normal and pathological conditions.

Clinically, the best method of studying the sugar-tolerance is that proposed by Janney and Henderson.[6] This consists in giving 1.75 grams of glucose in 2.5 C. C. of water, per kilo body weight, by mouth, the fasting blood-sugar level having been previously determined. Blood-sugar readings are then taken every half hour for two hours. A typical normal blood-sugar curve has been described by them, reaching its highest point, approximately 50 per cent above the fasting level, in half an hour, and returning to the original level within two hours.

Abnormal curves of diminished tolerance consist of a higher "peak" and a prolonged return to the fasting blood-sugar level, increased tolerance, of course, being indicated by a lower "peak" and more rapid return to normal. A diminished sugar-tolerance curve was put forward as typical of hyperthyroidism and an increased tolerance of hypothroidism. This technic is an improvement on the simpler method used by Cushing, insofar as it takes into account variations in tolerance due to differences in body weight, and substitutes the more accurate blood-sugar readings for the less accurate urine-sugar estimations. It also, in a rough way, takes into account the element of time, the blood-sugar curve representing a dynamic observation, as contrasted with the static one of glycosuria.

Other clinicians were not so slow to seize upon this method, and in rapid order typical curves of sugar-tolerance were described for hyper- and hypothyroidism,[6] carcinoma, diabetes mellitus, and thrombo-angiitis obliterans.[7] Pemberton[8] found a diminished-tolerance curve in many cases of chronic arthritis. Later, however, Rhodenberg and his collaborators,[9] who were among the most prolific and enthusiastic users of this method, have withdrawn their earlier conclusions, and in a review of two hundred and twenty cases in which the blood-sugar tolerance curve was studied, they conclude: "Many absolutely similar curves are found in such widely different conditions as diabetes mellitus, tuberculosis, epithelioma, and pregnancy." Janney[10] also states: " . . . one is forced, then, to the conclusion that an abnormal blood-sugar tolerance curve, whether hyperglycemic, hypoglycemic, or merely a delayed return to normal, is to be regarded solely as a general indication of endocrine disturbance," which is by no means demonstrated. And Strouse[11] concludes: "In states of hyperthyroidism I have curves identical with the diabetic and the normal. The curves of cirrhosis of the liver, pituitary disease, thrombo-angiitis obliterans, and even chronic nephritis, are, so far as their blood-sugar is concerned, identical with those found for the diabetic."

It is not difficult to understand why such discouraging results were obtained by this clinical method. The variable factor of the rate of intestinal absorption, and the still less controlled variable of the blood-tisue equilibrium, were entirely overlooked. Woodyatt and his co-workers,[5] however, using more elaborate physiological methods,[12] succeeded in establishing fairly definite normal standards of carbohydrate tolerance in both dogs and men, as well as apparently constant variations from the normal in certain endocrine states. Although no clinical method has developed from this work, it is the only method which has eliminated most of the uncontrolled variable factors in the technic, and any clinical method must give results consistent with those obtained by Woodyatt's method.

The essential difference between Wodyatt's conception of sugar-tolerance and those of the earlier writers, is expressed in his own words: "Sugar-tolerance must be regarded as a *velocity*, not as a weight. It must be measured in grams of glucose per kilo body weight *per hour of time;* . . . to determine the utilization rate of glucose in the body, the problem is to find the greatest rate at which glucose can be injected into a vein steadily without producing any glycosuria, . . . the injection must be continued long enough to permit the sugar to diffuse uniformly into the tissues and bring each to a corresponding state of saturation, before any conclusion can be drawn as to what the final and permanent effects of a certain rate of injection really are."

Woodyatt constructed a very ingenious and elaborate machine for injecting sterile glucose solutions of different concentrations intravenously at a fixed rate and over an indefinite period, often as long as seven or eight hours.[12] Using this technic, both in dogs and in a limited number of clinical cases, Woodyatt showed that glu-

cose tolerance in normal individuals lies somewhere between 0.85 gm. and 0.9 gm. of glucose per kilo body weight per hour, given intravenously over an indefinite period. This was shown to be dependent, not on the *percentage*, but on the *amount* of glucose per hour, and to be independent of the changes in concentration due to changes in the amount of water.

This method of determining the sugar-tolerance eliminates the errors due to variations in the rates of emptying of the stomach and intestinal absorption. An abnormal renal threshold for sugar can be eliminated by taking the fasting blood-sugar level. There may, however, be some doubt as to whether or not a glucose equilibrium between the blood and the tissues is reached. But since, at any time during seven or eight hours, the intravenous injection of 0.85 gm. glucose per kilo per hour does not cause glycosuria, while an increase of rate to only 0.9 gm (an increase of only 0.05 gm. per kilo per hour), causes sugar to appear in the urine, it seems reasonable to assume, as Woodyatt does, that both the blood and the tissues are in a state of sugar-saturation, since this small increase cannot be taken up by either of them and consequently overflows into the urine.

Woodyatt, then, introduced a new conception of sugar-tolerance, that of a *velocity* instead of a mass, as the unit of tolerance, and, by an improved technic, for the first time established a fairly accurate and reliable standard of normal carbohydrate-tolerance in man, which is approximately 0.85 gm. per kilo per hour, intravenously. Having established a normal tolerance, Woodyatt, in a limited number of clinical cases, studied the sugar-tolerance in abnormal conditions. Briefly, he found:

Normal tolerances—0.85-0.90 gm. per kilo per hour:

Four normal cases.

One case of myxedema.

Two cases of acromegaly.

One case of Froehlich's syndrome.

One case of gigantism of probable pituitary origin.

One case of diabetes mellitus.

Decreased tolerance—0.40-0.70 gm. per kilo per hour:

One non-diabetic pancreatitis (0.70 gm.).

Two mild diabetes mellitus cases (0.5-0.40 gm.).

Five cases hyperthyroidism. (0.6, 0.55, 0.55, 0.65, 0.60 gm., respectively.)

Increased tolerance:

No cases.

The study of the sugar-tolerance by this method may be considered as a functional test of the second class. It is the study of the ability of the body to perform a normal function—carbohydrate utilization—but in a manner not physiological—that is, intravenously. It forms the basis for estimating the physiological sugar-tolerance, with which less elaborate clinical methods must agree. So far no such clinical method has been perfected.

McLeod,[18] after a thorough review of the whole subject of sugar metabolism, sums up the situation very justly as follows: " . . . the determination of the blood-sugar curve cannot be of very great diagnostic value, except perhaps in the forming of an opinion of the severity of the disease in cases of diabetes or in following the results of treatment, but even in these cases it is probable that careful examination of the urine in relation to food ingestion is equally valuable." All, then, that can be concluded at present concerning the estimation of the sugar-tolerance in endocrine diseases is, that the few facts really established strongly suggest that the results obtained from the present clinical methods are completely unreliable. No value can be placed in results where the technic possesses so many obvious, uncontrolled sources of variation and error. Until there has been perfected some simple clinical method whose results agree with those of the best physiological investigations, the estimation of the sugar-tolerance cannot be of value as a functional test in endocrinology.

THE ADRENALIN-CHLORIDE TEST

The so-called Goetsch, or adrenalin chloride, test consists in observing the systemic reaction to the subcutaneous injection of 0.5 c.c. of $\frac{1}{1000}$ adrenalin chloride.[14] The pulse-rate, blood-pressure, tremor, perspiration, and subjective signs of nervousness are noted at five-minute intervals for an hour or more. This test may be considered as typical of the third, or non-physiological, type of functional test; for, while it is true that the organism normally does react to adrenalin, it is only by the widest possible interpretation that it may be said, when adrenalin is given subcutaneously in a relatively large, concentrated dosage, that a normal bodily function has been stimulated.

As originally put forward, the positive reaction was said to be characteristic of hyperthyroidism, and of particular value in differentiating thyroid states from tuberculosis or nervous states. Goetsch has since modified his interpretation of the test,[15] and states: "The test is an indicator of hypersensitiveness of the sympathetic nervous system. I am not prepared to say that all cases which show a positive test are, therefore, hyperthyroidism. However, we do know that the test is positive in all cases of hyperthyroidism . . . ; furthermore, of all the diseases associated with a hypersensitive nervous system, hyperthyroidism is by far the most common. On the other hand, in the presence of a negative response to the test, one can state definitely, I believe, that hyperthyroidism is not present." The validity of even this modified interpretation is strongly questioned by other observers.

Boothby and Sandford[16] studied the effect of the Goetsch test on the metabolic rate, blood-pressure, and pulse-rate in a large number of cases, hyperthyroid, hypothyroid, and normal. Their method consisted in taking the usual basal metabolic rate, then giving the adrenalin chloride and taking several metabolic-rate determinations at fifteen-minute intervals, at the same time recording the other phenomena of the Goetsch test. As a result of these observations, they conclude: "0.5 C. C. of adrenalin chloride subcutaneously, invariably causes an increase in metabolic rate usually accompanied by an increase in the ventilation rate, respiratory rate, number of heart-beats per minute, volume of beats, greater utilization of blood-carrying power and peripheral dilation, with an increased systolic and decreased diastolic blood-pressure. No relation is found between the intensity of the adrenalin reaction and the degree of hyper or hypothyroidism. *There is no sound physiological foundation.... for the assumption that the character of the reaction following adrenalin chloride is indicative of the action of the thyroid gland.*"

It may appear fallacious to condemn one functional test of thyroid activity largely because it does not agree with another functional test in a parallel series of observations. But it must be remembered that the phenomenon of a normal metabolic rate is one that has been thoroughly established by scientific physiological researches in various biological fields, and that the validity of its clinical application depends solely upon some sufficiently accurate clinical method which gives results agreeing with those of more elaborate and accurate physiological methods. There seems little doubt that the Haldane-Benedict method does so agree. In the absence, then, of any established physiological basis for establishing the normal and abnormal reactions to subcutaneous adrenalin chloride, its clinical validity must necessarily depend upon its agreement with the results of a more thoroughly grounded procedure.

Further observations throwing doubt upon Goetsch's claims are found in a recent report of Peabody, Sturgis, Tompkins, and Wearn.[17] They found that a fair percentage of individuals clinically normal gave a positive reaction; that a large percentage of cases with normal metabolic rates and no stigmata of hyperthyroidism gave positive reactions, and that many cases of infectious diseases gave positive reactions. On the other hand, cases with high metabolic rates and symptoms of hyperthyroidism gave negative reactions. Thus, among 143 army cases of "effort syndrome," with no signs of hyperthyroidism, and responding to graduated exercise where thyroid cases would not be expected to, 69, or 48 per cent, gave positive reactions. Boas[18] found the same result in 28 per cent of 21 similar cases. Three of 17 uncomplicated cardiac cases gave positives. One or more positive reactions were obtained in cases of syphilis, chorea, asthma, acromegaly, epilepsy, diabetes, dementia praecox, and hyperthyroidism. Twelve of 21 cases convalescent from acute infectious processes were positive, and 50 per cent of 50 convalescent influenzal pneumonias. Nicholson and Goetsch[19] reported 19 of 40 cases as positive in questionable or incipient tuberculosis.

On the other hand, of 21 cases of outstanding hyperthyroidism, 15, or 71 per cent, gave positive reactions, while 6 unquestionable cases, with metabolic rates between 21 and 35 per cent above normal, gave negative reactions. There was no relation found between the degree of severity and the intensity of the reaction. Of 9 cases in which thyroidectomy had been done several years previously, and who had no symptoms, 5 were negative, whereas 4, with basal metabolic rates of −18 per cent, −15 per cent, −1 per cent, and +12 per cent, respectively, were positive.

In the face of such evidence, one can only agree with their conclusions. "The positive reaction to adrenalin appears to occur most often in

highly nervous individuals, but is not constant in such persons. *The clinical significance of the reaction is not clear, but at present it certainly should not be regarded as having any specific significance in the diagnosis of hyperthyroidism.*" Like the estimation of the sugar-tolerance, the reaction to adrenalin chloride appears to be of little value as a functional test in endocrinology.

CONCLUSION

To sum up, we may note that the estimation of the basal metabolic rate, a clinical functional test based upon a well-established physiological function, appears to be of permanent value as a functional test in endocrinology. The estimation of the sugar-tolerance, while now established as a physiological function, is of questionable clinical value because an adequate clinical method for testing this function has not yet been developed. Finally, the results of the adrenalin chloride test, based on no physiological function, have simply been found, empirically, not to obtain in the manner originally claimed, and it must be abondoned as a functional test.

These conclusions need not appear necessarily discouraging. If one out of every three functional tests proved of definite value, we could not complain. The fact that of the three tests discussed, only the basal metabolic rate estimation has proved of permanent clinical value, is not due so much to better or profounder studies on the part of its authors, as it is due to the fact that it is the only clinical functional test of the three which is based upon a well-established physiological function.

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ACUTE INTESTINAL OBSTRUCTION*

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DETROIT, MINNESOTA

Failure to make a correct diagnosis, procrastination and delay in diagnosis, palliative treatment with narcotics, attempted treatment with purgatives and enemas, late operation, and a high mortality rate may be said to be a summary of the literature of the past in regard to acute intestinal obstruction. The percentage of mortality has not materially decreased in the past thirty-five years, in spite of improvement in diagnostic aids and operative technic. It remains, in the language of Moynihan, "One of the greatest and most disastrous emergencies" which can confront the physician, for, in no other affection does a favorable result depend so largely upon prompt and accurate diagnosis and early operative procedure.

Acute intestinal obstruction may be classified as either mechanical or paralytic, and the former alone will be considered in this paper. In the great majority of cases the obstruction is caused by external strangulated hernias, intussusception, post-inflammatory and post-operative adhesions and bands, and volvulus. Other causes may be important in individual cases, but are rare as compared with the four mentioned. External strangulated hernias might be considered by themselves, but the essential feature is acute obstruction, and it forms a large percentage of the number of cases operated on. Deaver reports 276 cases of acute intestinal obstruction, with 110 deaths, of which 61 were from external strangulated hernia,—a surprising number considering the ease with which early diagnosis may be made and operation performed. Intussusception is usually given second place with a mortality as high as 30 per cent, while obstruction from

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post-inflammatory and post-operative adhesions and bands is a close third. Percentages of incidence of causes must necessarily differ, depending upon the individual observer.

There is usually a rather definite train of symptoms, varying somewhat on account of the cause, the location of the obstruction, the stage of the affection, and whether the obstruction is complete or incomplete. It must be recognized, of course, that atypical cases may differ very widely.

The course of the disease may be divided into three stages, whose limits may be roughly defined: the initial stage of abdominal pain, nausea, vomiting, and often some bowel movement; the second of continued pain, nausea, regurgitant vomiting, abdominal distension, and complete constipation; and the third marked by the appearance of profound toxemia.

Pain is commonly sudden and severe, increases in severity until the stage of gangrene is reached, is only partially relieved by narcotics, and, if relieved, soon recurs. Nausea promptly appears, with vomiting from within a few moments to a few hours. It may not be severe, but is persistent. There may be some slight passage from the bowels and the pulse, temperature, and respiration are normal or only slightly disturbed as compared with the severity of the other symptoms. With such a clinical picture as this, it is not too much to say that an immediate diagnosis of an intra-abdominal surgical condition should be made, and that steps be taken preparatory to early surgical procedure. Delay in attempting the refinement of diagnosis is contrary to good practice. The stomach should be washed out, and one or more high enemas should be given, and, if the conditions are unchanged, the only logical conclusion is surgical intervention. The clinical picture of the onset of intussusception as given in the classical description of Clubbe is somewhat different. "The very sudden onset in a previously healthy baby is a peculiarity of intussusception. The child is seized quite suddenly, screams, turns pale, vomits, and in a short time seems to recover itself, only to cry again at intervals as if in pain. Soon after the first scream it may have a normal movement. In from two to ten hours blood will be passed by rectum in 98 per cent of the cases. The mass, which varies in size and position, can nearly always be made out by careful palpation when the child is under an anesthetic. The child may not look ill, its pulse-rate may hardly be raised, and the temperature may be normal." With these symptoms a single examination should be sufficient to make a diagnosis.

In the second stage the pain is continued and more severe, often paroxysmal in nature, with intervals of time when there is comparative ease, succeeded by agonizing pain. The vomiting is persistent, uncontrollable, the quantity of the vomitus being somewhat dependent on the location of the obstruction. Generally speaking, the lower the location, the more profuse is the vomitus. Its character changes with the progress of the affection, being first stomach contents and later bowel contents, sometimes mixed with blood. The abdomen is distended, the legs are drawn up, the pulse is quickened, and the temperature somewhat raised. The countenance is anxious, the eyes are wide and staring, and, in the mind of the patient, there is a sense of impending disaster. Hiccough may be a constant and annoying symptom.

Signs of shock and collapse usher in the third stage, thus graphically described by Scudder: "The patient lies in bed prostrate, with gaunt cheeks and sunken eyes. His pain has vanished, and some haunting fear has taken its place. His hands wander with pathetic restlessness over the bedclothes and are cold and damp. His face is pinched, his expression vacant and staring, and his voice is feeble. The pulse has sunk to an uncountable thread. There is regurgitation of black vomitus through the mouth and nose. The breathing is ineffective and shallow and accompanied with faint sighs and perhaps by feeble inarticulate groans."

Once the diagnosis is made, the treatment resolves itself into immediate operation, with a few exceptions. Palliative treatment is indicated only when the physical condition is such that a surgical operation cannot be borne. Escomel reports the treatment of sixteen cases of inoperable obstruction by the use of tablespoonful doses of liquid petrolatum every half hour, intramuscular injections of pituitrin, and elevation of the foot of the bed. His results are not given. Intussusception may be reduced by repeated large enemas given under anesthesia, with the patient in the inverted posture. Obturation by worms may be relieved by heroic purgation or prolonged use of enemas. In general, however, it may be said that these measures occupy a limited field and that their effect is quite problematical. There is a suspicion that their use may contribute to the mortality of the affection if any real dependence is placed upon them.

The operative incision should be median, as a rule, and of sufficient length to afford working room. Special symptoms of pain and tenderness and individual taste may indicate a different incision in some cases. On opening the abdomen distended and discolored loops of intestine usually present themselves. If the site of the obstruction cannot be immediately located by superficial examination, systematic search should then be made. The cecum should be located, and, if collapsed, the small bowel should be passed rapidly through the fingers until the site of the obstruction is reached. If the cecum is distended, the sigmoid should be picked up and the entire colon examined.

When the obstruction is found, three questions arise: first, the relief of the obstruction, second, the repair of the bowel; and, third, the matter of bowel-drainage.

The release of the bowel from the obstruction is, of course, essential and yet is often a minor part of the operation. If the obstruction has been of sufficiently long continuance, the changes in the bowel at the site of the obstruction may be extensive. They vary from a slight injury to the external coat, which a few stitches will cover, to the most extensive gangrene. One case of the writer's lost thirty-six inches of ileum after less than twenty hours of obstruction. The treatment of these changes must depend upon the individual judgment of the operator. The question of the drainage of the bowel above the site of the obstruction is of the greatest importance. The toxemia of acute intestinal obstruction must be referred to the bowel above the obstruction. Various experiments to ascertain its origin have been made by a number of investigators, and widely different conclusions have been reached, with the exact truth still in the background. However, it seems safe to state that the toxemia is from a toxin formed in the mucosa of the duodenum and its embryonic outbuds, that it is partly discharged into the bowel and partly absorbed into the bloodstream, directly from the mucosa. Trauma of the bowel, impaired circulation, bacterial invasion of the mucosa and dehydration of the tissues by vomiting, may be factors in the formation of the toxin. This toxin, in the nature of a proteose, when formed in closed loops of duodenum, may be extracted, isolated, and, when injected into normal animals, will produce the symptoms of profound intoxication and, if in large enough doses, death.

The conclusions arrived at may not support the question of drainage of the upper bowel, but clinical experience has demonstrated its value. I cite particularly the experience of McKenna, who reports successful operation in eight cases of obstruction by simply performing jejunostomy. In two of my cases, there was extensive gangrene. The gangrenous bowel was removed and the ends of the bowel sewed into the abdominal wound to permit drainage. The amount of fluid poured out was enormous in both cases.

A further factor in the decision as to bowel repair is the length of time involved. It is better to have a living patient with an abdominal drainage than a dead patient with a finely wrought repair.

I desire to report four cases of acute obstruction encountered during the past year.

Case 1.—H. P., aged 19. On September 15, 1919, he had vomiting, severe abdominal pain, localization of pain in the right lower quadrant, local tenderness, and fever. He had a chill on the second day and was then brought to the hospital for operation. The appendix was found ruptured. It was removed and deep drainage was employed. In ten days the boy left for home with a small suppurating area. On the morning of October 5th he began to have acute pain in the abdomen, vomited soon after, and his physcian was called. He made a diagnosis of acute obstruction, and in the evening brought him back to the hospital. The patient's pain was agonizing, and his calls for relief most imperative.

Operation showed that the obstruction was about six inches above the ileocecal valve, that a small portion of the omentum was wrapped about the ileum and that the mass was adherent to the cecum. The obstruction was easily relieved, and the abdomen was closed.

Recovery was uneventful.

Case 2.—A man, aged 35. I did a simple appendectomy on him in 1905. His health had been good since with the exception of one or two accidents. On the morning of April 13, 1920, he awoke with a moderate pain in the lower abdomen. The pain rapidly increased in severity, and there were nausea and vomiting, with considerable prostration. Medical aid was called and a hypodermic of morphine administered, which relieved for a time. His wife called me at seven in the evening and described his condition. I advised hospital care at once, and he was brought in eight miles. Pain was intense and continuous, nausea and vomiting or attempted vomiting marked, hiccough almost continuous, and the prostration was profound. He gave the impression of being a very sick man. The pulse was rapid and small, and the temperature only slightly raised. The abdomen was slightly distended, and there was tenderness over the scar of the former operation. Palpation showed a boggy mass, the size of a small orange, a trifle to the inner side of the scar.

Operation was performed at one o'clock that night by Dr. C. N. Callander. There was found

an acute strangulation of the ileum low down towards the cecum.

Case 3.—A man of Norwegian descent, farmer, aged 59. On September 13, 1920, the patient was riding a corn-binder and at eleven in the morning he began to have pain in the region of the navel. He continued work until noon and ate a moderate dinner. He was sick at the stomach and vomited at half past twelve. He went to work at half past one and, in spite of pain and nausea, continued until five in the evening, when he was obliged to stop. His pain was so severe that he could not care for his horses or do his chores and he went to bed, eating no supper. He was very thirsty and drank water freely, which in every instance was promptly vomited. His pain was variable—sometimes of extreme severity, sometimes almost absent. His bowels did not move after the pain commenced. I saw him at eleven in the evening—approximately twelve hours after the initial pain. He lay upon his bed, completely dressed and seemed well. He had no pain, and pulse, temperature, and respiration were normal. The abdomen seemed normal. In a few moments he was writhing with pain, the abdomen was rigid, the legs were flexed on the thighs, the breath was short and shallow, and the pulse was 66 per minute. He was removed to the hospital and placed in charge of a nurse, who gave him repeated enemas of soap and water—Noble's enemas, etc.,—with no result. He complained bitterly of pain and endeavored by posture to secure the maximum of relief.

Operation was begun at 10:30 a. m. Incision was made through the right rectus extending above and below the level of the navel. Distended and reddened bowel was found, and a considerable quantity of serosanguineous fluid escaped. With some difficulty the cecum was grasped and the ileum was then easily found, and the small bowel was passed though the fingers as rapidly as possible. Distended bowel was reached at a point estimated to be about six feet from the ileocecal valve. The exact cause of the obstruction was not found, but the site of the constriction and the line of demarcation, between distended and collapsed bowel, was plainly to be seen. As the distended bowel was drawn into view, gas began to pass downward, and before closure, was passing into the cecum. The appendix, found deeply imbedded behind the cecum, was removed, and the wound was closed without drainage.

Convalescence was stormy. Gaseous distension was extreme and rather persistent. On the seventh day he was given lemonade freely, and the gas subsided. It might be fair to assume that an over-alkaline stomach was the exciting cause of the gas. He was discharged on the fourteenth day. It might be interesting to note that he was given twenty-eight enemas of various kinds following the operation.

Case 4.—Strangulated hernia in a boy, aged three years. The hernia was first noticed six months before, and protruded at various times. The hernia descended about six o'clock in the evening. Attempts at reduction were unavailing.

Operation was performed within an hour. A knuckle of bowel, the size of a small walnut, protruded. The internal ring was approximately the size of a lead pencil. Recovery was uneventful, and the patient went home at the end of the sixth day—December 1, 1920.

DISCUSSION

Dr. Carl von Neupert, Jr. (Stevens Point, Wis.): Moynihan, in opening his chapter on intestinal obstruction, very aptly remarks: "When called upon to deal with a case of acute intestinal obstruction the surgeon is confronted with one of the gravest and most disastrous emergencies." He further says, "To operate early in a case of intestinal obstruction is an experience few surgeons enjoy."

I shall recite three cases, which were interesting and not very common.

A woman over sixty years of age, a teacher, was brought home from the northern part of Wisconsin, and the family physician called. She gave a history of constipation and abdominal distress of long standing with complete blocking of the bowels for eleven days. She has always been frail and in poor health. I saw her in consultation and was asked to operate.

It was found that the obstruction was caused by a large, egg-shaped gall-stone impacted in the small bowel. The gall-stone was removed by incising the bowel, which seemed a proper procedure, as the bowel presses had been applied. This patient died within appeared in good condition after a few hot salt com-

A boy, aged 14, while riding along a dark sidewalk one Halloween, ran into a rope stretched across the walk and was thrown forward from the wheel, striking his abdomen on the handle-bar. I saw him two days after the accident, at which time he presented symptoms peculiar to bowel-invagination. A sausage-shaped mass could be made out in the umbilical region, which, on operation, was found to be invaginated bowel. A short-circuiting lateral anastomosis was made, using a Murphy button, which came away in due time.

The boy made a good recovery and seemed quite well until seven weeks later, when he stumbled against the edge of a bed in the night and soon developed acute abdominal symptoms. Operation was refused at this time, and the boy died in severe pain and distress a few days later. Autopsy was refused.

A short time ago a young woman, pregnant five months, was brought to the hospital and seen in consultation with her physician. She presented symptoms and history of bowel obstruction of a number of days' standing. The usual measures had been applied at home, such as oil, salts, glycerin, and frequent enemas in various positions. The abdomen, especially above the umbilicus, was enormously distended, accompanied by frequent regurgitant vomiting.

On opening the abdomen, to the right of the median line with the umbilicus about the center of the incision, a large, dark-colored mass presented itself, almost completely filling the abdomen. This was found to be a twisted pedicle cyst of the right side, and adherent to it were two loops of bowel and the appendix. The cyst was evacuated and removed, section being made close to the uterus on account of the gangrenous condition of the pedicle.

The obstruction was undoubtedly caused by the pressure of this great mass on the bowel—crowded upward by the pregnant uterus. This woman made a good recovery and is expecting confinement momentarily.

In most cases, the incision is probably best placed so that the ileocecal junction can easily be reached, from which point the search can be begun. One can then rapidly run through loops of collapsed bowel until the distended area and the point of obstruction are reached.

In closing my discussion I quote some of the masters in surgery. It is the vast experience of these men and their conclusions which must ever be our guide-posts.

Murphy opposed with all his might the use of hypodermics of morphine in acute abdominal conditions, at least until a definite and correct diagnosis had been made. He stated that the one lesion in which the mortality-rate had not been decreased in many years was internal intestinal obstruction. Why? Because the diagnosis is not made until the patient is moribund, and then a splendid technical procedure is carried out, but the patient dies. He called it "procrastination mortality."

In a recent letter Deaver states that he has not noted any decrease in the mortality of intestinal obstruction, and from reliable sources, both here and abroad, this reaches as high as 40 or 50 per cent. And, again, why? Surely not because of lack of operating facilities, at least in most cases; neither can it be because of poor operative technic, as in both there has been a marked forward stride. Only in isolated cases, such as Dr. Weeks has had to contend with on account of transportation facilities, can a reasonable excuse be offered.

Ochsner says, when in doubt in such cases a competent surgeon is justified in operating; if inexperienced, until competent help can be secured, all food should be withheld, and gastric lavage and normal salt solution by rectum with the drip method should be instituted.

As I understand it, the law does not excuse a man for breaking it because of ignorance. We are expected to know what is right or wrong in the eyes of the law of the land. The sooner we recognize this principle in medicine and surgery, just that much sooner shall we reduce our mortality, and this applies especially to the subject under discussion.

Dr. James O. Cavanaugh (St. Paul, Minn.): From the few cases of acute intestinal obstruction I have come across it would seem that the delay in operating is always so extremely exhaustive to the patient that it makes recovery doubtful. In the future, whether it is one or two o'clock in the morning or any other time, I have my mind made up to operate immediately after I have determined that the patient has intestinal obstruction.

Dr. Frederick A. Dunsmoor (Minneapolis, Minn.): If it is true that acute intestinal obstruction gives a mortality of 40 or 50 per cent even with operation, it is time we all sat up and took notice. If these cases are not operated on, and the diagnosis is correct, we know they are all going to die. The reduction of intussusception has been spoken of, but I am referring to any surgical obstruction of the bowel. The essential point is to make a diagnosis, and that is where we fall down. After we have made the diagnosis we must do something immediately. But even if we relieve the obstruction by operating, we may, as Murphy used to say, do a splendid operation, yet death results. If one does not remove the material which is retained above the obstruction, but allows it to remain in the bowel, that patient is likely to die anyway from absorption of the material when it reaches the colon. If it is found that any part of the intestine does not bleed when pricked slightly with a needle, then I believe it is our duty to go even farther, either resecting the whole part immediately, or incising and fastening it so that the complete operation can be done later. Sometimes we operate as a last resort, expecting the patient to die about as soon as we get through. But are we going to be cowards when we know that the thing to do is to relieve the obstruction at once? If in some cases we could simply get drainage and give the patient an opportunity to recover from the immediate effects of the obstruction, we could then go on and finish the operation later. Sometimes we can not possibly make a resection, but might drain and wait until a later favorable period.

If in these cases we do three things, we will give the patient a chance to live:

First, operate immediately.

Second, not only relieve the obstruction, but remove any material that needs to be removed.

Third, drain all material above the point of obstruction, and then give such stimulation as is indicated.

Dr. Clarence C. Del Marcelle (Neenah, Wis.): About eight o'clock in the evening I was called to see a lady upon whom hysterectomy had been done three months previously. I found her with subnormal temperature, rapid pulse, and vomiting. I went away after prescribing enemas and getting a nurse. I saw her again at twelve that night, diagnosed obstruction and advised operation. I operated about 2 o'clock and found obstruction—the bowel being quite discolored. I put in a Paul tube and saline solution was given. She lived three days and then died. The patient was operated on six hours after first seen.

Dr. Axel W. Swedenburg (Thief River Falls, Minn.): I have always observed that the lower the obstruction, the later the vomiting appears; the higher, the sooner it appears, the more frequently it occurs and probably not so much in quantity. Dr. Weeks is probably right in saying that when vomiting does come on in cases of low obstruction it is more copious.

Dr. Weeks (closing): Diagnosis may be made by means of the injection of bismuth into the rectum, passing it up as far into the bowel as possible in order to ascertain if possible the site of obstruction; or giving it by mouth and then taking an *x*-ray picture to discover the site from above.

It is interesting to note that many of these cases of obstruction follow either an attack of appendicitis or an operation for appendicitis. Also the age of these patients with obstruction is of interest. In the youngest cases that we can see, the condition is present at birth—the typical one being imperforate anus.

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THE DEARTH OF PHYSICIANS IN THE NORTHWEST AND ITS CAUSES

In the absence of reliable data as to the actual conditions existing in the Northwest which we characterize as a "dearth of physicians," any consideration of causes for such condition must be necessarily more or less indefinite. Two facts are well established: the population of the Northwest has steadily increased during the past decade or longer, and there has been, in some years at least, a decrease in the number of physicians in some of the states; and, secondly, the calls for physicians coming to our office and to other sources of information have never been so numerous.

To the question, What is the cause? we have no satisfactory reply, but we believe there are several causes, some of which are permanent and some temporary. One of the principal causes, and one which seems to be only temporary, is the rush of physicians from the country to the cities, due, in large measure, to false reports of the large earnings made by city physicians, which reports deal altogether with gross, and not net, incomes; and perhaps we should say with the gross incomes of the bigger men in the cities.

That the movement city-ward will soon cease is evident to all who are familiar with the actual conditions in the practice of city physicians. We believe the percentage of prosperous city physicians is much less than the percentage of prosperous country physicians, and that city practice has few or no inducements to a well-established country physician except in unusual cases. It is safe to say that every city in the country is over-supplied with physicians. In spite of this fact, the man of unusual scientific attainments or the man without such attainments, if he is a business-getter, will succeed in any city, that is, he will succeed in getting a large practice, but generally such a man will have only a small net income.

The urgent demand for physicians to take the places of men who have left small towns cannot be met under present conditions. The automobile has so enlarged the field of every physician that fewer physicians can be supported in a given field. The automobile has trebled and quadrupled the distances a physician can ride, and has thus brought to the home of every farmer the services of the highest grade man within a distance of twenty or thirty miles of the farmer's home, while much of the more lucrative practice of surgery goes to more distant places.

The outcome of this condition is apparent, and is evidenced by the fact that many small places are clamoring for physicians. How can they get them? In our opinion they can get them only by largely increased fees or by a community guaranty of a fixed income for the physician who settles in such a community. So long as a physician can be obtained in an emergency from a distance of thirty or forty miles, community interest in a subsidized physician cannot be aroused; but in a sparsely settled territory, more or less inaccessible for months at a time, the community will respond to any reasonable call for the united support of a physician.

Why should not the druggists, who are especially interested and likewise well informed on the subject, take the lead in settling this problem, instead of expecting physicians to make the sacrifice necessary to meet the urgent needs and demands of the public.

This is no small problem, and its solution can be found only in community action brought about by the leading men of the community in need.

THE PROFESSION OF NURSING

Along with many other social and occupational interests disorganized by the World War, the profession of nursing is in slow process of readjustment. It needs the assistance of the medical profession, whose right hand it is, at this critical period of its evolution.

It was the dictum of a teacher of medicine of the past generation that "the physician should take care of his instruments and should regard the nurse as one of the instruments." But the nurse of today is much more than that: She is a partner in the physician's service; she is the actualizer of his good purposes,—the kinetic of his potential.

More important, still, is the fact that the nursing profession has become an agency,—perhaps the most effective agency of social service; the mechanism of a nation-wide movement for the betterment of the public health, the practical exponent, to more direct results than the doctor can achieve, of preventive medicine. All this makes for the greater import of the readjustments which the profession of nursing has to make at this point of its history if it is not to lose the vantage-ground of progress and position it has so far gained.

It is faced with two critical conditions. First, there is a scarcity of trained nurses felt in every field in which nurses are employed; second, there is a scarcity of applicants for training which amounts to a famine in the schools of nursing. These two conditions cannot be traced to a common cause. Each must be individually accounted for, although the remedy for each is undoubtedly a matter of education.

To discuss the first of these conditions: The World War put the initial strain upon the supply of American nurses which, prior to that event, had been fairly adequate in the country at large. The War did not cause any large mortality among nurses. A few women remained overseas in Red Cross service and are slowly drifting home again. But the War did something more. It tested out the fitness of women in nursing; it discovered wide differences in the degree and the quality of their preparation for service. And then it brought them back to find that in their absence a new demand for their service had developed; to find that a new public sense had been awakened to the physical deficiencies of our young manhood and, in perhaps lesser degree, of our young womanhood; to find a new hospitality to public health measures, a new anxiety for the proper development of childhood, a new appreciation of the value of public health education. Laws, both permissive and obligatory, looking to the public employment of public health nurses in county service, had been passed. An impetus had been given to public school nursing, visiting nursing in the larger cities, social service nursing, and even industrial nursing.

In a word, the nurses of the country, trained for private and hospital practice, their horizon of the past bounded by these fields, suddenly find their calling undergoing rapid specialization, broadening into new avenues of opportunity and demanding of them superior fitness and a higher order of preparation. By the help of graduate courses, hastily manned and newly offered in a number of universities, by dint of personal study and by their unaided efforts in hard schools of new and difficult experience, they are striving to meet the occasion. In so doing they are seriously draining the supply of nurses in private and hospital service and in institutional and teaching positions. The situation so created is an embarrassing one. It calls for the higher training of a large group of graduate nurses who will ultimately and fitly fill these new and extending fields of opportunity.

It calls, too, for the active recruiting of the ranks of trained nurses to meet the demand of the public for the professional care of the sick, from among whom the further selection of women fit for higher education and more responsible service must be made. And right there we run aground upon the shoals of another emergency, the present scarcity of pupil nurses seeking admission to the schools.

This condition is one far more difficult to account for and for which effective remedies are most urgently required.

Remedies, however, cannot be applied without some intelligent appreciation of the ills they are intended to cure. And there is room for the suspicion that some of these are ancient ills, of which the sufferers themselves have become but recently aware.

It is less than a dozen years since a school of nursing was first established in the primary interest of nursing education. The reason for the existence of the training schools of the past has been, and continues to be, in the vast majority of instances, the hospital's need of nursing service. So imperative has been this need that hospitals have found it profitable to pay a stipend to the nurse to be trained.

In some of these hospitals the nurse has received a fair education, albeit she has often failed of that consideration which is due to the student under any auspices. In other and too many institutions the nurse's quid pro quo has been painfully inadequate. The hospital has called upon its pupils for the devotion of two or three years

of service, hard service at that and in the heyday of their lives. It has subjected them to a discipline, in quantity and quality equally absurd. It has given them a type of training which could be acquired by the ordinary intelligent student in one-half the required period. This is not to say that the training, however much or little time it may have occupied, has been adequate. Students who have asked for the living bread of a real education have been given the mere stones of superficial technic, and they have sacrificed too much time in the vain attempt to assimilate it.

Women of serious purpose, of great willingness to serve, of due capacity for service, have slowly become aware of the injustice this system entails and they hesitate to accept a vocation at such a cost. It is unfortunate that they have not yet learned to discriminate between the fair and the unfair schools and, particularly, to appreciate the schools whose standards are set and supported by their association with the universities of high rank.

The situation suggests its own remedy. Minnesota is doing much, and has yet more to do, in encouraging among students a just estimate of the value of a university education for nurses. For the past eleven years the University of Minnesota has maintained a model university school of nursing, but its registrative capacity has been limited and its housing conditions have been unfortunate. It has recently taken an important step toward expansion. It has received overtures from the Minneapolis General Hospital, the Charles T. Miller Hospital of St. Paul, and the Northern Pacific Hospital to put the training of their nurses under the supervision of the University and to use their services in the training of the entire associated body of nurses. The movement will do much to standardize nursing education in the state.

There is another, if a minor, cause of discouragement to the prospective student for nursing. She graduates from the high school at about eighteen years of age. She cannot be admitted to satisfactory schools of nursing until she is twenty.

The University of Minnesota has thrown a bridge across this age-gap by the provision of a five year combined course in the College of Science, Literature and Arts, which the student may enter upon high school graduation, and in the School of Nursing to which she is eligible later. In this combined course she earns the double degrees of Bachelor of Science and Graduate in Nursing, academic values which tell upon her future. The course makes of her, besides, a better trained and a more competent woman who, completing her university education, is well along the path of preparation for the larger service of the public.

In a word, the major remedy for the scarcity of registrants in the schools of Nursing is to make nursing education worth while; to lift the schools to the level of fitness as training places for a profession of service; to require of them the practical and efficient use of the time of the students in training; to give them a rank which will confer distinction upon their graduates, which will make them avenues of entrance not merely to the practice of nursing but to that more meaningful thing—the high calling of the nurse.—R. O. B.

MISCELLANY

RESORTS

Killin' skeeters,
Eatin' ants,
Goin' to natur'
In a trance;
Call it livin'
If you please,—
Outin' or
A life o' ease.
Ne'er o' slumbers
Naught o' peace,
Closest friends
Ticks an' fleas;
Blisterin' sunrise,
Bellowin' herds,
Echoin' woodland,
Chatterin' birds;
Ripplin' waters,
Croakin' frogs,
Fragrant flowers,
Burning logs,
Doin' nothin'
Bein' alone,
Livin' simple
'Way from home.
Their's a mission
To fulfill,—
Gettin' vigor,
Boosten' bills,
Helpin' settle
Mental ills,
Savin' many,
Many pills.

—Wan O. Squill.

NEWS ITEMS

Dr. J. F. Gates, of Chicago, has joined the staff of the Shaw Hospital at Buhl.

Dr. O. C. Strickler, of New Ulm, has been visiting the clinics of Chicago.

Dr. James H. Beaty, of St. Cloud, was married last month to a young lady of Lake City.

Dr. P. A. Lommen, of Austin, has been attending clinics in Chicago.

Dr. R. F. McHugh, of Aitkin, was married last month to Mrs. Victoria L. Taylor, of St. Paul.

Dr. C. G. Hoagland has moved from Veblen, S. D., to Madison, S. D.

Dr. H. T. Kenney has moved from Pierre, S. D., to Watertown, S. D.

Dr. Bernard Sorose has moved from Barnesville to Spring Grove.

The Oakland Park Tuberculosis Sanatorium at Thief River Falls is soon to have an administration building, which will cost $25,000.

Dr. J. A. Johnson, of Bottineau, N. D., was married last month to Miss Ruth A. Collins, of Barnesville, Minn.

Dr. Harold Schwartz, superintendent of the Murray Hospital, Butte, Mont., was married last month to Miss Lulu J. Nimmo, of the same city.

The Montana State Medical Association holds its annual meeting on July 13th and 14th, at Billings.

Dr. Paul A. O'Leary, of the Mayo Clinic, Rochester, was married last month to Miss Ruth Youmans, of Rochester.

Dr. Myron O. Henry, of St. Cloud, a 1920 University Medical School graduate, is taking a special course in orthopedics in Harvard.

Dr. E. Klaveness, of Minneapolis, has gone to Europe for the summer. He will visit the hospitals of England and the Continent.

The degree of Doctor of Laws was conferred upon Dr. C. H. Mayo at the commencement exercises of Northwestern University, June 15.

Dr. John Stacey, an oldtime physician of Sherburne County, died last month at the age of 83 Dr. Stacey practiced in Minnesota over fifty years.

The body of Dr. J. P. Rosenwald, of the 151st Field Artillery Medical Corps, who was killed in France on May 6, 1918, was interred in Minneapolis on June 14th, with military honors.

Dr. E. R. Crow, a recent graduate of the Medical School of the University of Minnesota, who has just completed his internship at the General Hospital, has located for practice in Franklin.

Dr. Benjamin Frankson, of Upham, N. D., died last month at the age of 54. Dr. Frankson was a graduate of Milwaukee Medical College, class of '96.

The Montana Military Hospital at Fort Harrison, near Helena, was formally opened last month. It can now accommodate 168 men, but plans are under way to increase its capacity to 500 beds.

Members of Field Hospital Company No. 135, who formed a club in France in 1917, met in St. Paul last month for re-organization at the home of Dr. N. G. Mortenson. They meet again in St. Cloud this month for a picnic.

Dr. Jehiel W. Chamberlin, of St. Paul, died on June 14th at the age of 64. Dr. Chamberlin was one of the leading oculists in the Northwest and had practiced in St. Paul over a third of a century. He had given his services to practically all the hospitals and charitable institutions of the city.

At the June meeting of the Grand Forks (N. D.) District Medical Society, Dean H. E. French, of the Medical School of the University of North Dakota, read a paper on "Superstitions, Philosophy, and Science in Medicine," and we imagine it was both rich and instructive. We hope to be able to publish it.

The sixth annual convention of the Catholic Hospital Association of the United States and Canada, was held in St. Paul, at St. Thomas College, on June 21-24. The Association is composed of representatives from fifteen Canadian hospitals and from thirty-one states of the Union.

At the next monthly meeting of the Sioux Falls (S. D.) District Medical Society on July 12th, the program consists of a "Symposium on Headache." Dr. G. A. Stevens will discuss the subject from a general point of view; Dr. H. R. Hummer, from a neurological; Dr. S. A. Keller, from the viewpoint of the oculist and aurist.

Dr. Thomas L. Armitage, of Princeton, died on June 2d, at the age of 61. Dr. Armitage was born in Ireland and studied in several Dublin schools, and graduated in medicine in Ireland. He was seven years on the British army medical staff. He located in Princeton in 1898.

The New Madison Hospital of Madison, S. D., graduated its first class of nurses on June 9th with appropriate exercises. There were six nurses in the class, all of whom had spent their first two years in the old hospital, which went out of existence upon the completion of the new building a year ago. The hospital has established the eight-hour day for student nurses.

At the commencement exercises of the University of Minnesota the degree of Master of Science in Surgery was conferred upon the following Fellows in the Mayo Foundation: Drs. L. P. Bell, J. M. Hayes, E. M. Johnstone, G. D. Mahon, A. E. Osterberg, F. R. Sanderson, and G. E. Sutton.

Dr. H. G. Irvine, of Minneapolis, attended the meetings of the American Dermatological Association at Swampscott, Mass., and the A. M. A. at Boston. He read a paper before the Section on Dermatology and Syphilis, entitled "Two Hundred and Fifteen Cases of Syphilis After Five Years." Dr. Irvine was elected vice-chairman of the Section for the ensuing year.

The North Dakota section of the American College of Surgeons met last week in Bismarck. The program called for a public meeting at which Dr. E. P. Quain, of Bismarck, was to preside and the following men to deliver addresses: Supreme Court Justice, A. M. Christianson, of Bismarck; Dr. Franklin H. Martin, of Chicago; Dr. Jabez N. Jackson, of Kansas City, Mo.; Dr. Richard R. Smith, of Grand Rapids, Mich.; Dr. Arthur T. Mann, of Minneapolis; and the Rev. C. B. Moulinier, president of the Catholic hospital Association of Canada.

The Pasteur Institute, located on the Campus of the University, and conducted by the Minnesota State Board of Health, has been closed because of lack of funds. As rabies has almost disappeared from Minnesota and as commercial antirabic vaccines are entirely satisfactory the care of cases of rabies can be turned over to the family physician. The Division of Preventable Diseases of the Health Board, located on the Campus, will continue to make diagnoses in suspected cases of rabies in animals that have exposed persons.

Dr. W. J. Mayo delivered the Henry Jacob Bigelow Medalist Address before the Boston Surgical Society June 6 at which time he was awarded the Bigelow Gold Medal. The Henry Jacob Bigelow trust fund was established in 1915 by Dr. William Sturgis Bigelow, of Boston, in memory of his father. The income is used by the Boston Surgical Society to award medals to persons who have made valuable contributions to the advancement of surgery in this country or in other countries. Dr. Mayo is the first person to receive the Henry Bigelow Medal.

Col. Henry M. Smith, of the Indian Medical Service of the British army, the noted cataract specialist, was the guest of the Minnesota Academy of Ophthalmology and Oto-Larngology on June 22d. From 8 o'clock in the morning to 3 o'clock in the afternoon, with an interval for luncheon, Dr. Smith performed 78 cataract operations, demonstrating the Smith-Indian method, 95 per cent of which may be counted as successful operations. The work was done in St. Josephs's hospital, St. Paul. In the evening a banquet was tendered by the Academy for Dr. Smith and his travelling companion, Dr. W. A. Fisher, of Chicago. The following eye specialists from outside the Twin Cities were present: Dr. Fred G. Gook, Eau Claire, Wis.; Dr. C. W. Wilkowske, Chippewa Falls, Wis.; Dr. John H. James, Mankato; Dr. John M. Robinson, Duluth; Dr. John H. Rindlaub, Fargo, N. D.; Dr. Archie McCannel, Minot, N. D.; and Dr. A. Einar Johnson, Watertown, S. D. We hope to treat this important visit of Dr. Smith to America editorially in our next issue.

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PHYSICIANS LICENSED AT THE APRIL (1921) EXAMINATION TO PRACTICE IN THE STATE OF MINNESOTA

BY EXAMINATION

Name	Where and When Graduated	Residence
Anderson, Howard Clayton	Northwestern (4 year certificate) 1920	General Hospital, Minneapolis
Diehl, Harold Sheely	U. of Minn., M. D., 1918	1321 Sixth St. S. E., Minneapolis
Engstrand, Oscar Julius	U. of Minn., M. B., 1921	Swedish Hospital, Minneapolis
Fitz, Reginald	Harvard, M. D., 1909	Rochester, Minn.
Foss, Allen Richard	U. of Minn., M. B., 1920	General Hospital, Minneapolis
Habein, Harold Clinton	Harvard, M. D., 1920	University Hospital, Minneapolis
Hall, Earl Chauncey	U. of Minn., M. B., M. D., 1921	General Hospital, Minneapolis
Keith, Norman Macdonnell	Johns Hopkins, M. D., 1911	Mayo Clinic, Rochester, Minn.
McBeath, Ewing Cleveland	U. of Minn., M. B., 1920	St. Mary's Hospital, Minneapolis
McVicar, Chas. Stanley	Toronto U., 1907	Mayo Clinic, Rochester, Minn.
Napoliello, Vincent	U. of Minn., M. B., 1920	414 Oak St. S. E., Minneapolis
Wagner, Charles Edward	Johns Hopkins, M. D., 1918	527 W. Main St., Lock Haven, Pa.

THROUGH RECIPROCITY

Abramson, Benj. Wm.	Chicago Coll. Med. & Surg., 1916	Anamoose, N. D.
Amberg, Samuel	U. of Heidelberg, 1898	Rochester, Minn.
Anderson, Richard Elseph	U. of Illinois, 1918	Willmar, Minn.
Bernard, Bethune Caldwell	U. of Virginia, 1914	Lake Park, Minn.
Bonta, Maurice Buford	Johns Hopkins, 1904	Rochester, Minn.
Bozer, Hermann Eugene	U. of Michigan, 1919	Rochester, Minn.
Brandt, Arnold Louis	Washington U., Mo., 1902	Red Wing, Minn.
Brown, George E.	U. of Michigan, 1909	Rochester, Minn.
Chambers, Edward Francis S.	U. of Pennsylvania, 1907	Rochester, Minn.
Chandler, Orville Barnes	Vanderbilt U., 1916	Miller Hospital Clinic, St. Paul
Desjardins, Arthur Ulderic	U. of Pennsylvania, 1912	Rochester, Minn.
Edlund, Gustaf, Jr.	Northwestern (4 year certificate) 1920	St. Paul, care Miller Hospital
Figi, Fred Adam	U. of Nebraska, 1918	Rochester, Minn.
Greene, Willard Parker	U. of Michigan, 1904	4006 W. 44th St., Morningside, Minneapolis
Greenfield, William John	U. of Michigan, 1918	Rochester, Minn.
Hardt, Leo Louis	Rush, 1917	Rochester, Minn.
Harrington, Stuart William	U. of Pennsylvania, 1913	Rochester, Minn.
Helmholz, Henry Frederic	Johns Hopkins, 1906	Rochester, Minn.
Kohlbry, Carl Otto	Washington U., 1919	600-700 Fidelity Bldg., Duluth, Minn.
Lissack, Edmund H. M.	U. of Nebraska, 1920	Waseca, Minn.
Osburn, John N. N.	U. of Maryland, 1909	1009 Nicollet Ave., Minneapolis
Sherman, Carnot H.	Northwestern, 1919	Marine-on-St. Croix, Minn.
Shillington, Maurice A.	Creighton, 1914	N. P. Hospital, Brainerd, Minn.
Walters, Henry Waltman	Rush, 1920	Rochester, Minn.

NATIONAL BOARD CREDENTIALS

Magath, Thos. Byrd	U. of Illinois, 1920	Rochester, Minn.

PUBLISHES' DEPARTMENT

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The Official Journal of the

North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

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TRANSACTIONS OF THE SOUTH DAKOTA STATE MEDICAL ASSOCIATION—FORTIETH ANNUAL MEETING 1921

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F. E. CLOUGH, M. D.....Lead

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Term expires 1922.

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Term expires 1923.

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N. K. HOPKINS, M. D.....Arlington
Term expires 1924.

COUNCILOR—FOURTH DISTRICT
T. F. RIGGS, M. D.....Pierre
Term expires 1922.

COUNCILOR—FIFTH DISTRICT.
L. N. GROSVENOR, M. D.....Huron
Term expires 1924.

COUNCILOR—SIXTH DISTRICT
FREDERICK TREON, M. D.....Chamberlain
Term expires 1924.

COUNCILOR—SEVENTH DISTRICT
F. ISRAEL PUTNAM, M. D.....Sioux Falls
Term expires 1924.

COUNCILOR—EIGHTH DISTRICT
J. P. ISAAC, M. D.....Freeman
Term expires 1923.

COUNCILOR—NINTH DISTRICT
F. E. CLOUGH, M. D.....Lead
Term expires 1923.

COUNCILOR—TENTH DISTRICT
H. R. KENASTON, M. D.....Bonesteel
Term expires 1922.

MEMBER OF HOUSE OF DELEGATES, AMERICAN MEDICAL ASSOCIATION
R. D. ALWAY, M. D.....Aberdeen
Term expires 1922.

ALTERNATE
T. F. RIGGS, M. D.....Pierre
Term expires 1922.

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R. G. MAYER, M. D. .....Cresbard

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F. J. PUTNAM, M. D. .....Sioux Falls

YANKTON DISTRICT
F. V. WILLHITE, M. D. .....Yankton
J. A. HOHF, M. D. .....Yankton

BLACK HILLS DISTRICT
J. W. FREEMAN, M. D. .....Lead
N. T. OWENS, M. D. .....Rapid City

ROSEBUD DISTRICT
F. A. BRYANT, M. D. ..... Herrick

PLACE AND TIME OF NEXT MEETING—HURON, May, 1922

Proceedings of the House of Delegates

First Session, Tuesday, May 24, 1921

The House of Delegates met at 2:45 p. m., and was called to order by the President, Dr. Harry T. Kenney, Pierre.

The Secretary called the roll, and the President announced a quorum present and said the House was ready to proceed with the transaction of its business.

The Secretary presented his report on membership as follows:

Aberdeen (1st) District	78
Watertown (2d) District	32
Madison (3d) District	13
Pierre (4th) District	8
Huron (5th) District	29
Mitchell (6th) District	37
Sioux Falls (7th) District	52
Yankton (8th) District	37
Black Hills (9th) District	43
Rosebud (10th) District	8
Total	337

At the conclusion of the report the Secretary stated that last year he received a communication from Dr. Alexander R. Craig, Secretary of the American Medical Association, urging the appointment of a committee on Child Welfare and Health of Public Schools to co-operate with the State Educational Association, and requesting that the committee be composed of a representative from the State Board of Health, a pediatrician, an ophthalmologist, and two general members, consequently the President appointed on this committee Dr. Park B. Jenkins, Waubay, Superintendent of State Board of Health; Dr. Goldie Zimmerman, Sioux Falls; Dr. A. Einar Johnson, Watertown; Dr. R. J. Jackson, Rapid City; and Dr. Cyrus Wendt, Canton.

He said the committee had reported to the American Medical Association.

The report of the Committee on Hospitals was called for.

The Secretary stated that last year the state was divided up and reported by districts. This report had been made to the A. M. A., and presented in one of the recent issues of the *Journal of the American Medical Association.* He thought the report was made by Dr. C. E. McCauley, Chairman of the Committee.

The report of the Committee on Constitution and By-Laws was called for.

The President stated that Dr. Spafford and himself were very much in favor of the adoption of the Constitution and By-Laws set forth by the American Medical Association.

The Secretary stated that last year the committee could not report because the American Medical Association had in preparation a revision of its Constitution and By-Laws, but this matter was brought to the attention of the House of Delegates, and proposed changes were made in the rather inadequate Constitution and By-Laws of the South Dakota State Medical Association. He wrote to Dr. Craig of the American Medical Association, who said the American Medical Association had in preparation a constitution and by-laws which they were aiming to have adopted by all State Associations and component or district medical societies. The Secretary said he had received several copies of this proposed constitution and by-laws. He wrote Dr. Cook, a member of the committee, who acquiesed and favored the adoption of the same by the South Dakota State Medical Association.

Notification of such proposed changes having been given last year, he said the House of Delegates could adopt the Constitution and By-Laws this year.

Accordingly Dr. J. G. Chichester moved that the Constitution and By-Laws as recommended by the committee be adopted, and that the committee be authorized to make the necessary changes in verbiage, and report to the House of Delegates at its next meeting.

Seconded by Dr. G. S. Adams and carried.

The Secretary stated that the report of the Committee of Arrangements was embodied in the official program.

The Secretary brought up the matter of raising the dues, which, he said, would have to be settled before changes could be made in the Constitution and By-Laws. Last year a resolution was adopted asking the Secretary of the State Association to correspond with the Secretaries of the various District Medical Societies to ascertain what their sentiments were in regard to raising the annual dues to $10.00.

The following letter was sent to the Secretaries of the different District Societies:

Flandreau, South Dakota, June 25, 1920.

My dear Doctor:

At the last meeting of the South Dakota State Medical Association a resolution was passed directing me to correspond with the various District Medical Societies to ascertain what the sentiment would be in regard to the raising of our annual dues to $10.00 per year, and $6.00 to go to the State Medical Association and $4.00 to the District Society.

There are a great many questions forcing them.

selves upon the medical profession which will require expenditures of a larger sum of money than $3.00 per capita for the State Association. Every other profession and business activity is making greater endeavors along their lines, why not we?

Please present this letter at your next meeting and report what the sentiment is. With kindest personal regards, I am

Very fraternally,
F. A. Spafford,
Secretary-Treasurer.

In response to this letter he received replies from Watertown, Huron, and Yankton Districts.

After considerable discussion for and against raising the dues, Dr. J. G. Chicester moved that the Committee on Revision of the Constitution and By-Laws be requested to embody in their report that the dues to the South Dakota State Medical Association shall be $6.00 for each member; and that the district societies fix their own dues over and above this amount.

Seconded by Dr. Putnam and carried.

On motion, the House of Delegates adjourned to meet immediately after the scientific program, Wednesday morning, May 25th.

Second Session, Wednesday, May 25, 1921.

The House of Delegates met at 12:15 p. m. and was called to order by the President.

President Harry T. Kenney presented the following report of the Committee on Legislation and Public Policy:

Your committee on Medical Legislation desires to submit the following report for your consideration:

In compliance with recommendations made by this Association, your Committee, during the recent session of the Legislature, prepared a bill which was designed to establish a preliminary educational standard for candidates desiring to practice the healing art. This bill provided for the appointment of a preliminary educational examining board, to be composed of three educators selected from the major educational institutions of our state; this board to pass upon the educational qualifications of all candidates for license to practice the healing art in South Dakota. This bill further provided that each candidate who was found to be qualified should be certified up to the examining board of the particular school of practice which he desires to follow for the required professional examination. The educational qualifications required by the provisions of this bill were sufficient to adequately protect the public from incompetent individuals who sought to practice, and sufficient to establish in the public mind the proper relation between the regular practitioner and the various pretenders to the profession. This bill met with vigorous and well organized opposition and, in the opinion of the Committee, its failure to become a law was largely due to the lack of organization and assistance from the regular medical profession

Considering our failure to secure the passage of the preliminary educational bill and other public welfare measures, we are of the opinion that the principal objects of the South Dakota State Medical Association are not being satisfactorily accomplished, that the ultimate results obtained through the usual routine procedures which have been followed by the Association in the past have not obtained the satisfactory results that have been secured by the commercial organizations in their endeavors to build up and maintain a strong and economic structure. The general inefficiency of the organization is evidenced by the lack of membership and interest in the affairs of the Association; approximately only 50 per cent of the physicians in the state are members and a much smaller number attend its meetings or take part in its deliberations. It is the opinion of the Committee that this unsatisfactory state of affairs is due largely to the present system of financing this organization, which is entirely inadequate to the proper maintenance of its efficient management and supervision.

As a remedy your Committee recommends that every effort be made to secure the necessary legislation to transfer the Department of Medical Licensure from the State Board of Health to a separate Board, the secretary of which should be appointed from a list of names submitted to the Governor by the State Medical Association, that such appointee should also act as Secretary of this Association; that provisions for financing this Board and its secretary should be made by legislative enactment, requiring every legally qualified physician to pay an annual renewal license fee which would entitle him to associate membership. Such renewal fees would create a fund which would be sufficient to maintain an office, its necessary equipment, and pay a salary to the Secretary. The Committee recommends that such law embrace and contain provisions wherein the Secretary be made a full-time officer and not allowed to engage in private or other enterprises. The Committee also recommends that it be made a part of the Secretary's duties to make a comprehensive study of legislative matters, to attend sessions of the Legislature to endeavor to secure needed legislation and prevent the passage of undesirable laws, to attend all District Society meetings, to keep in close touch with the needs and requirements of the profession and to conduct his office as a clearing house for all general information relative to medical activities in this state.

Respectfully submitted,
H. T. Kenney
P. B. Jenkins
F. A. Spafford

Dr. Chichester moved that the report be adopted.

Seconded and carried.

The report of the Committee on Medical Education was called for. No report.

The report of the Committee on Hospitals was called for. No report.

The Secretary presented the Constitution and By-Laws as revised.

Dr. Chichester moved that the constitution and By-Laws as presented and amended be adopted.

Seconded and carried.

The President appointed the following Committee on Nominations:

Drs. T. F. Riggs, Chairman; J. G. Chichester, N. K. Hopkins, L. N. Grosvenor, N. T. Owens, P. J. Preston, and Frederick Treon.

On motion, the House adjourned to meet Thursday, May 26, at 8:30 a. m.

THIRD SESSION, THURSDAY, MAY 26, 1921

The House met at 8:30 A. M., and was called to order by President Kenney.

The Secretary read the report of the Committee on Nominations, as follows:

President, Dr. G. S. Adams, Yankton.

First Vice-President, Dr. G. G. Cottam, Sioux Falls.

Second Vice-President, Dr. F. E. Clough, Lead.

Third Vice-President, Dr. R. L. Murdy, Aberdeen.

Board of Councilors:

Dr. A. E. Johnson, Watertown, 2 years.
Dr. N. K. Hopkins, Arlington, 3 years.
Dr. L. N. Grosvener, Huron, 3 years.
Dr. Frederick Treon, Chamberlain, 3 years.
Dr. F. I. Putnam, Sioux Falls, 3 years.
Place and time of meeting, Huron, May, 1922.
Dr. Freeman moved that the report be adopted. Seconded and carried.

The Secretary brought up the matter of renewal of the contract with THE JOURNAL-LANCET for publishing the proceedings.

Dr. J. G. Parsons moved that the Secretary be authorized to renew the arrangements for publication of the proceedings with THE JOURNAL-LANCET, at $1.50 per member for ensuing year. Seconded and carried.

The incoming President announced the appointment of the following committees:

LEGISLATION AND PUBLIC POLICY

Dr. Harry T. Kenney ..... Pierre
Dr. Park B. Jenkins ..... Waubay
Dr. F. A. Spafford ..... Flandreau

EDUCATION

Dr. T. F. Riggs ..... Pierre
Dr. Joseph C. Ohlmacher ..... Vermillion
Dr. W. R. Ball ..... Mitchell

CHILD WELFARE

Dr. Park B. Jenkins ..... Waubay
Dr. Goldie Zimmerman ..... Sioux Falls
Dr. J. G. Parsons ..... Sioux Falls
Dr. F. A. Spafford ..... Flandreau
Dr. Cyrus Wendt ..... Canton

HOSPITALS

Dr. C. E. McCauley ..... Aberdeen
Dr. F. E. Clough ..... Lead
Dr. F. A. Spafford ..... Flandreau
Dr. T. F. Riggs ..... Pierre
Dr. B. A. Bobb ..... Mitchell
Dr. G. G. Cottam ..... Sioux Falls
Dr. S. M. Hohf ..... Yankton

ARRANGEMENTS

Dr. L. N. Grosvenor ..... Huron
Dr. Howard Lee Saylor ..... Huron
Dr. William H. Sexton ..... Huron
Dr. John C. Shirley ..... Huron
Dr. Benjamin Thomas ..... Huron
Dr. O. R. Wright ..... Huron

Adjourned.

PROCEEDINGS OF THE BOARD OF COUNCILORS

FIRST SESSION, TUESDAY, MAY 24, 1921

The Council met at 4:30 P. M., and as there was not a quorum present, adjournment was taken until immediately after the meeting of the House of Delegates, Wednesday morning, May 25.

SECOND SESSION, WEDNESDAY, MAY 25, 1921

The Council met at 12: 30 P. M.

There were present Drs. Cottam, Clough, Spafford, Kenney, Riggs, Grosvenor, Treon, and Isaac, who organized by electing Dr. Frederick Treon, Chamberlain, as President and Dr. T. F. Riggs, Pierre, as Secretary.

The Secretary presented his financial report for last year as follows:

FINANCIAL REPORT OF THE SECRETARY-TREASURER

1920-1921

Receipts

May 18, 1920, Amount on hand	$973.26
May 24, 1920, per capita dues, Huron District	3.00
July 3, 1920, per capita dues, Watertown District	10.00
July 6, 1920, per capita dues, Watertown District	3.00
July 18, 1920, per capita dues, Sioux Falls District	3.00
July 21, 1920, per capita dues, Black Hills District	3.00
July 27, 1920, per capita dues, Sioux Falls District	6.00
July 31, 1920, per capita dues, Aberdeen District	3.00
Sept. 30, 1920, per capita dues, Black Hills District	3.00
Oct. 8, 1920, per capita dues, Mitchell District	3.00
Jan. 7, 1921, per capita dues Sioux Falls District	6.00
Jan. 10, 1921, per capita dues, Pierre District	21.00
Feb. 14, 1921, per capita dues, Black Hills District	3.00
Feb. 15, 1921, per capita dues, Yankton District	75.00
Mar. 1, 1921, per capita dues, Black Hills District	114.00
Mar. 4, 1921, per capita dues, Sioux Falls District	54.00
Mar. 8, 1921, per capita dues, Watertown District	96.00
Mar. 17, 1921, per capita dues, Black Hills District	3.00
Apr. 1, 1921, per capita dues, Huron District	69.00
Apr. 1, 1921, per capita dues, Rosebud District	21.00

Apr. 6, 1921 per capita dues, Sioux Falls District	45.00
Apr. 9, 1921, per capita dues, Huron District	9.00
Apr. 9, 1921, per capita dues, Sioux Falls District	6.00
Apr. 14, 1921, per capita dues, Pierre District	3.00
Apr. 15. 1921, per capita, dues, Sioux Falls District	6.00
Apr. 16, 1921, per capita dues, Huron District	6.00
Apr. 16, 1921, per capita dues, Mitchel District	108.00
Apr. 30, 1921, per capita dues, Madison District	36.00
May 3, 1921, per capita dues ,Madison District	3.00
May 3, 1921, per capita dues, Yankton District	36.00
May 3, 1921, per capita dues, Sioux Falls District	12.00
May 9, 1921, per capita dues, Sioux Falls District	18.00
May 10, 1921, per capita dues, Huron District	3.00
May 14, 1921, per capita dues, Rosebud District	3.00
May 14, 1921, per capita dues, Sioux Falls District	6.00
May 17, 1921, per capita dues, Aberdeen District	225.00
May 18, 1921, per capita dues, Black Hills District	9.00
May 22, 1921, per capita dues, Sioux Falls District	9.00
May 24, 1921, per capita dues, Aberdeen District	9.00
Total	$2024.26

Disbursements

June 25, 1920, warrant No. 1. The American Print Shop	46.85
July 3, 1920, warrant No. 2. William Whitford	175.08
July 9, 1920, warrant No. 3. Journal-Lancet (Jan.-July 1920)	199.50
July 10, 1920, returned to Watertown District (overpaid)	4.00
Sept. 11, 1920, warrant No. 4. Theodore Erickson (stationery)	31.30
Sept. 11, 1920, warrant No. 5. K. W. Hawkanson (flexible ledger)	51.50
Jan. 11, 1921, warrant No. 6. Journal-Lancet (July '20-Jan. '21)	189.00
Feb. 11, 1921, warrant No. 7. Will A. Beach Printing Co. (cards)	15.62
Mar. 31, 1921, warrant No. 8. Legal services of Tom McNamee	100,00
Mar. 31, 1921, warrant No. 9. M. C. Lilley Co. (badges)	22.30
May 24, 1921, warrant No. 10. State Publishing Co. (programs 1921)	83.25
May 24, 1921, warrant No. 11. F. A. Spafford (salary and expenses)	287.70
Error in footing	2.10
Total	1208.20
Balance	816.06

Drs. Riggs, Clough, and Cottam were appointed as a committee to audit the accounts of the Secretary-Treasurer.

The Committee appointed to audit the books of the Secretary-Treasurer reported that they had carefully gone over the accounts, checked up the receipts and disbursements and found them correct.

Adjourned.

PROCEEDINGS OF THE SCIENTIFIC MEETINGS OF THE ASSOCIATION

First Day, Wednesday, May 25

Morning Session

The Association met in the Auditorium of Elks Hall, and was called to order by the President, Dr. Harry T. Kenney, of Pierre.

The Secretary stated that he had received a telegram from the West Virginia State Medical Association, which was in session at this time, sending greetings and congratulations with best wishes for a successful and profitable meeting.

It was moved that the Secretary be instructed to send a similar telegram extending reciprocal courtesies to the West Virginia State Medical Association.

Seconded and carried.

Dr. D. B. Rice, Aberdeen, read a paper on "Hyperleucocytosis in Extreme Sepsis," which was discussed by Drs. Billingsley, Gregory, Henderson, Clough, Koobs, and Hedblom, after which the discussion was closed by the essayist

Dr. C. C. Hoaglund, Madison, read a paper entitled "Direct Laryngoscopy, Bronchoscopy, and Esophagoscopy as Diagnostic Aids." This paper was discussed by Drs. Grosvenor, Hedblom, Hill and Gregg and, in closing, by the sayist.

Dr. J. B. Gregg, Sioux Falls, read a paper on "The Prognosis and Treatment in Tuberculosis of the Larynx," which was discussed by Dr. Parsons and, in closing, by the author of the paper

Dr. T. F. Riggs, Pierre, read a paper on "The Finney Pyloroplasty," which was discussed by Drs. Murdy, Hedblom, Cottam, and Bobb, and, in closing, by the essayist.

On motion, the Association adjourned until 1:30 P. M.

First Day—Afternoon Session, May 25

The Association reconvened at 1:30 P. M., and was called to order by the President.

The First Vice-President, Dr. G. S. Adams, Yankton, took the chair, and President Dr. Harry T. Kenney, Pierre, delivered the presidential address. He selected for his subject "Medical Progress."

Dr. Carl A. Hedblom, Rochester, Minnesota, read a paper (by invitation) entitled "The Diagnosis and Treatment of Tuberclosis Empyema,"

which was discussed by Dr. M. M. Grove, and, in closing by the essayist.

Dr. A. C. Stokes, Omaha, Nebraska, read a paper (by invitation) entitled "Diagnosis and Treatment of Osteomyelitis." This paper was discussed by Drs. Peabody, Riggs, Cottam, and Rock, and, in closing by the essayist.

Dr. M. S. Henderson, Rochester, Minnesota, read a paper (by invitation) entitled "Status of the Bone-Graft in the Treatment of Fractures," which was discussed by Drs. Clough and Stokes, and, in closing, by the essayist.

On behalf of the Association, President Kenney extended a vote of thanks to Drs. Hedblom, Stokes, and Henderson for their interesting and instructive papers.

On motion, the Association adjourned until Thursday, May 26, at 9 A. M.

Second Day, Thursday, May 26

Morning Session

Hon. S. A. Travis, Deputy Industrial Commissioner, Pierre, spoke on "Workmen's Compensation Laws." His paper was discussed by Drs. Clough, Chichester, Riggs, Howe, Spafford, Rock, Westaby, Wright, Kenney, and the discussion closed by Mr. Travis.

Dr. Spafford moved that the President appoint a committe to co-operate with the Industrial Commissioner at Pierre in regard to arrangements of a reasonable fee bill for workmen's compensation cases.

Seconded and carried.

The President appointed on this committee Drs. T. F. Riggs, Chairman, G. G. Cottam, L. N. Grosvenor, F. E. Clough, B. A. Bobb, R. L. Murdy, S. M. Hohf.

Dr. N. C. Ramstad, Bismarck, North Dakota, read a paper (by invitation) on "Negative Pressure in Empyema," which was discussed by Drs. Riggs, Bobb, and Maytum, after which the discussion was closed by the essayist.

Dr. Frederick E. Franchere, Sioux City, Iowa, read a paper (by invitation) entitled "When Shall We Operate for Mastoiditis?" This paper was discussed by Drs. Alway, Hoaglund, Lorenson, and Hill and, in closing, by the essayist.

Dr. J. C. Litzenberg, Minneapolis, Minnesota, read a paper (by invitation) on "Prophylaxis of Eclampsia," which was illustrated by slides, and was discussed by Drs. Spafford, Bobb, Holtz, Hopkins, Sherwood, and Rosenthal, and the discussion was closed by the essayist.

On behalf of the Association, President Kenney extended a vote of thanks to Drs. Ramstad, Franchere, and Litzenberg for their valuable and instructive papers.

On motion the Association adjourned until 1:30 P. M.

Second Day, Afternoon Session

The Association reconvened at 1:30 P. M., and was called to order by the President.

Dr. C. Sherwood and Dr. H. J. Barton, Watertown, read a joint paper on "Suppurative Appendicitis with Localized Abscess or General Peritonitis."

Dr. G. G. Cottam, Sioux Falls, read a paper entitled "Fracture Discolation of the Head of the Humerus."

Dr. F. E. Clough, Lead, gave an illustrated "Clinical Talk on Fractures of the Elbow."

Dr. L. A. Walker, Supervisor of District No. 10, Minneapolis, Minnesota, gave an informal talk on "Ex-Service Men from a Medical Examination Standpoint." His remarks were discussed by Drs. Bobb and Clough.

Dr. Spafford moved that any member of a State Association other than the South Dakota State Medical Association presenting a paper before this Association, beginning with this session, shall be elected an honorary member.

Seconded by Dr. McCauley and carried.

Dr. Michael Ebert, Webster, read a paper entitled "The Prevention of Acidosis in the Treatment of Diabetes."

Dr. Goldie Zimmerman, Sioux Falls, read a paper on "Acute Glandular Fever in Children."

Dr. D. A. Gregory, Sioux Falls, followed with a paper on "A Plea for the Early Diagnosis and Treatment of Cerebrospinal Syphilis," which was discussed by Dr. Harry T. Kenney.

Dr. Spafford moved that a vote of thanks be extended to the citizens of Aberdeen and to the members of the Aberdeen District Medical Society for their hospitality and elaborate entertainment during this meeting.

Seconded and unanimously carried.

The retiring President, Dr. Kenney, thanked the members for the splendid support they had given him during the meeting.

As there was no further business, scientific or otherwise, to come before the meeting, on motion, which was duly seconded and carried, the Association adjourned to meet in Huron in May, 1922.

F. A. Spafford, M. D.,
Secretary-Treasurer

DISTRICT AND COUNTY ROSTER

ABERDEEN DISTRICT MEDICAL SOCIETY—NO. 1

PRESIDENT
Whiteside, J. D.....Aberdeen

SECRETARY
Ranney, T. P.....Aberdeen

Adams, B. A.....Bristol
Adams, J. F.....Aberdeen
Aldrich, H. H.....Orient
Alway, R. D.....Aberdeen
Baer, T. H. .....Timber Lake
Bailey, F. C.....Redfield
Baldwin, F. M.....Redfield
Bates, W. A.....Aberdeen
Bonney, T. C.*.....Aberdeen
Brosseau, J. E.....Frankfort
Brown, A. E.....Webster
Bruner, J. E.....Frederick
Carpenter, G. S.....Bowdle
Carson, O. E.....Hecla
Chapman, W. S.....Redfield
Chase, A. E.....Northville
Chichester, J. G.....Redfield
Cliff, F. N.....Milbank
Cook, J. F. D.....Langford
Countryman, G. E.....Aberdeen
Crain, F. M.....Redfield
Creamer, Frank H.....Dupree
Curtis, J. E.....Lemmon
*Honorary member.

Deertz, J. J.....Brentford
Dinsmore, W. E.....Claremont
Dunn, J. E.....Groton
Ebert, M. H.....Webster
Farrell, W. D. .....Aberdeen
Fiksdal, M. J.....Webster
Flett, Charles .....Milbank
Fox, C. F.....Mellette
Freyberg, F. W.....Aberdeen
George, W. A.....Selby
Gerdes, O. H.....Eureka
Hart, B. M.....Onida
Hart, R. S.....Groton
Herman, H. J.....Webster
Hill, Robert.....Ipswich
Holmes, A. E.....Aberdeen
Holtz, Louis.....Aberdeen
Jackson, E. B.....Aberdeen
Jarvis, Abbie A.....Faulkton
Jenkins, P. B. .....Waubay
Johnston, M. C.....Aberdeen
Jones, R. R. .....Britton
Jones, T. D.....Bowdle
King, H. I.....Aberdeen
King, Owen .....Aberdeen
Kleger, S. A.....Mellette
Kraushaar, F. J.....Aberdeen
Kutnewsky, J. K.....Redfield
Lavery, C. J.....Aberdeen

Longstreth, W. I.....Sisseton
Lowe, C. .....Mobridge
Lull, Sherman .....Waubay
Lundquist, C. C.....Leola
McCauley, C. E.....Aberdeen
Mertens, J. J.....Gettysburg
Michael, L. F.....Gettysburg
Miller, J. F.....Andover
Miller, Frank.....Aberdeen
Murdy, B. C.....Aberdeen
Murdy, R. L.....Aberdeen
Murphy, T. W. .....Pierpont
Olson, C. O.....Groton
Peabody, H. C.....Webster
Peabody, Percy .....Webster
Pearson, A. W.....Peever
Potter, Geo. W.....Redfield
Ramsey, E. T.....Clark
Ranney, T. P.....Aberdeen
Rice, D. B. .....Aberdeen
Rosenthal, S.....Aberdeen
Senescall, C. R.....Veblen
Sornsen, A. A.....Aberdeen
Sutton, Dewey.....Redfield
Twining, G. H.....Mobridge
Weishaar, C. H.....Aberdeen
White, W. E.....Ipswich
Whiteside, J. D.....Aberdeen
Whitney, L. D. .....Aberdeen
Wilson, R. D. .....Aberdeen

WATERTOWN DISTRICT MEDICAL SOCIETY—NO. 2

PRESIDENT
Burlingame, R. M...Watertown

SECRETARY
Sherwood, C. E.....Watertown

Ash, J. C.....Garden City
Abbott, G. A.....Watertown
Bartron, H. J.....Watertown
Bates, J. S.....Clear Lake
Boutelle, L. E.....Clear Lake
Burlingame, R. M....Watertown
Campbell, R. F.....Watertown
Crawford, J. H.....Watertown
Engh, H. A.....Watertown

Finnerud, H. M.....Watertown
Freeburg, H. M.....Watertown
Frink, O. G.....South Shore
Giere, E. O.....St. Paul, Minn.
Green. B. T.....Brookings
Gueffroy, H. A.....Frankfort
Hammond, M. J.....Watertown
Haroldson, Olaf....Watertown
Haskell, H. I. ..... Clark
Hendricksen, Paul.....Vienna
Hill, L. G.....Sioux Falls
Johnson, A. Einar.....Watertown
Koren, Finn .....Watertown

Lockwood, J. H.....Henry
McIntyre, P. S.....Bradley
Magee, W. G.....Watertown
Parsons, H. C.....Watertown
Preston, P. J.....Watertown
Richards, G. H.....Watertown
Rowe, A. N. .....Estelline
Sherwood, C. E. .....Watertown
Sherwood, H. W.....Doland
Smith, S. W. .....Watertown
Staley, F. H. .....Vienna
Tarbell, H. A.....Watertown
Vaughn, J. B.....Castlewood

MADISON DISTRICT MEDICAL SOCIETY—NO. 3

PRESIDENT
Hovde, C. H. R.....Madison

SECRETARY
Westaby, J. R.....Madison

Allison, B. S. .....Madison

Baughman, D. S. .....Madison
Grove, E. H.....Arlington
Hickman, G. L. .....Bryant
Hoaglund, C. C. .....Madison
Hopkins, N. K.....Arlington
Hovde, C. H. R.....Madison

Jordan, L. E.....Chester
Kellogg, H. E.....Madison
Noble, H. B.....Howard
Torwick, E. E.....Volga
Westaby, J. R. .....Madison
Westaby, R. S.....Madison

PIERRE DISTRICT MEDICAL SOCIETY—NO. 4

PRESIDENT
McLaurin, A. A.....Pierre

SECRETARY
Martin, H. B.....Harrold

Hollister, C. M.....Pierre
Kenney, H. T.....Watertown
Langsdale, G. H.....Highmore
Lee, J. O.....Mt. Vernon

Martin, H. B.....Harrold
McLaurin, A. A.....Pierre
Minard, R. W.....Midland
Morrisey, R. J.....Ft. Pierre
Riggs, T. F.....Pierre

HURON DISTRICT MEDICAL SOCIETY—NO. 5

PRESIDENT

Shirley, J. C.....Huron

SECRETARY

Grosvenor, L. N.....Huron

Amesberry, A. L.....Carthage
Bostrom, A. E. .....De Smet
Burman, G. E. .....Carthage
Cogswell, M. E.....Wolsey
Cowgill, C. H.....Iroquois
Crafts, Earl.....Scotland
Dyar, B. A.....De Smet
Grosvenor, L. N.....Huron
Jamieson, G. V. .....DeSmet
Launspach, G. W.....Huron
Leach, W. O.....Huron
McGarvey, F. B.....Cavour
McKie, J. F.....Wessington
McWhorter, Port.....Miller
Paddleford, J. F. .....Miller
Saxton, H. W. .....Huron
Saylor, H. L. .....Huron
Scheib, A. P. .....Hitchcock
Schwendener, J. E.....Bryant
Sewell, H. D.....Huron
Sheets, O. B.....Carthage
Shirley, J. C.....Huron
Sprague, B. H.....Huron
Taylor, E. B.....Huron
Thomas, Benj. .....Huron
Tschetter, J. S.....Huron
Wheelock, D. O.....Miller
Wood, T. J.....Huron
Wright, O. R.....Huron

MITCHELL DISTRICT MEDICAL SOCIETY—NO. 6

PRESIDENT

Delaney, W. A.....Mitchell

SECRETARY

Gillis, F. D.....Mitchell

Auld, C. V.....Plankinton
Ball, W. R.....Mitchell
Beukelman, W. H.....Stickney
Bigler, Lottie .....Armour
Bobb, B. A.....Mitchell
Bobb, C. S.....Mitchell
Bobb, E. V... .....Mitchell
Buffaloe, A. J.....Mitchell
Cochran, F. B. .....Plankington
Crawford, R. A.....Chamberlain
Delaney, W. A.....Mitchell
Farnsworth, C. P.....Mitchell
Gifford, A. J. .....Alexandria
Gillis, F. D.....Mitchell
Hunt, Wm.....Murdo
Jenkenson, H. E. .....
Wessington Springs
Jones, E. W.....Mitchell
Kammerling, T. S.....Spencer
Kelly, R. A.....Mitchell
Kidd, F. S. .....Woonsocket
Kimble, O. A.....Murdo
Koobs, H. J. G.....Mitchell
Lowthian, G. H.....Milbank
McComb, T. T. .....Letcher
McClellan, C. B.....Kennebec
McManus, Clara..Gann Valley
Maytum, W. J.....Alexandria
Mizner, Mark .....Parkston
Northrup,F. D.....Draper
Rogers, J. C.....White Lake
Smiley, T. B.....Mt. Vernon
Sprecher, Samuel.....Tripp
Stockdale, C. P.....Ethan
Templeton, C. V...Woonsocket
Treon, Fred.....Chamberlain
Wallis, S. R.....Mitchell

SIOUX FALLS DISTRICT MEDICAL SOCIETY—NO. 7

PRESIDENT

Putnam, E. D.....Sioux Falls

SECRETARY

Donahoe, S. A... ..Sioux Falls

Billion, T. J.....Sioux Falls
Billingsley, P. R...Sioux Falls
Bliss, P. D.....Colton
Bower, C. F.....Hartford
Brandon, P. E.....Sioux Falls
Cottam, G. G.....Sioux Falls
Craig, D. W.....Sioux Falls
Culver, C. F.....Sioux Falls
DeVall, F. C.....Garretson
Donahoe, S. A.....Sioux Falls
Donahoe, W. E.....Sioux Falls
Eagan, J. B.....Dell Rapids
Egan, M. H.....Sioux Falls
Gage, E. E.....Sioux Falls
Gregg, J. B.....Sioux Falls
Gregory, D. A.....Sioux Falls
Grove, A. F.....Dell Rapids
Grove, M. M.....Dell Rapids
Hanson, O. L.....Valley Springs
Housman, W. McK..Sioux Falls
Hummer, H. R.....Canton
Hyden, A.....Alcester
Jones, T. E.....Sioux Falls
Jordan, A. A.....Hudson
Keller, S. A.....Sioux Falls
Keller, W. F.....Sioux Falls
Klaveness, E..Minneapolis, Minn.
Miller, E. C. .....Brookings
Moe, A. J. .....Sioux Falls
Moore, W. E.....Sioux Falls
Mullen, R. W. ....Sioux Falls
Nessa, N. J.....Sioux Falls
Parke, L. L. .....Canton
Parsons, J. G.....Sioux Falls
Perkins, E. L.....Sioux Falls
Putnam, E. D.....Sioux Falls
Putnam, F. I.....Sioux Falls
Reagan, R.....Sioux Falls
Rider, A. S.....Flandreau
Roberts, W. B.....Sioux Falls
Rock, H. J. .....Sioux Falls
Rundlett, D. L.....Sioux Falls
Sackett, Roy.....Parker
Spafford, F. A.....Flandreau
Sherwood, H. H.....Humbolt
Siedenberg, F.....Sioux Falls
Smedley, Irene.....Sioux Falls
Schwartz, Jos.....Sioux Falls
Stenberg, E. S.....Sioux Falls
Stern, M. A.....Sioux Falls
Stevens, R. G.....Sioux Falls
Stevens, G. A. .....Sioux Falls
Thompson, T. G.....Sioux Falls
Tufts, A. H.....Sioux Falls
Van Demark, G. E...Sioux Falls
Winsett,W. E.....Sioux Falls
Zetlitz, Arne.....Sioux Falls
Zetlitz, K. A. L.....Sioux Falls
Zimmerman, Goldie....Sioux Falls

YANKTON DISTRICT MEDICAL SOCIETY—NO. 8

PRESIDENT

Landmann, G. A.....Scotland

SECRETARY

Beall, L. F.....Irene

Adams, G. S.....Yankton
Beall, L. F.....Irene
Blezek, F. M.....Tabor
Burkland, P. R.....Vermilion
Bushnell, Wm. F.....Elk Point
Cramer, L. L.....Viborg
Crecelius, H. A.....Volin
Cruikshank, Thos. .....Vermilion
Duguid, J. O.....Springfield
Eagon, Alonzo .....Turton
Ellis, John W.....Elk Point
Embree, V. W.....Yankton
Frink, R. P.....Wagner
Gross, C. C.....Yankton
Hohf, J. A.....Yankton
Hohf, S. M.....Yankton
Isaac, J. P.....Freeman
Kauffman, E. J.....Marion
Keeling, C. M.....Springfield
Klima, Hermenegild .....Tyndall
Landmann, G. A.....Scotland
Langley, C. S.....Lake Andes
Moore, D. V.....Yankton
Moore, F. A.....Lesterville
Morehouse, E. M.....Yankton
Newby, H. D.....Parker
Payne, R. H.....Tripp
Posthuma, Anne .....Centerville
Roane, James.....Yankton
Smith, F. C.....Yankton
Stansbury, E. M. .....Vermilion
Stewart, J. L.....Lead
Stiffler, M. L.....Yankton
Struble, A. J.....Centerville
Swezey, F. A.....Wakonda
Vangsness, I. U. .....Beresford
Willhite, F. V.....Yankton
Wipf, A. A.....Freeman

BLACK HILLS DISTRICT MEDICAL SOCIETY—NO. 9

PRESIDENT

Pemberton, M. O....Deadwood

SECRETARY

Fleeger, R. B.....Lead

Bilger, F. W.....Ardmore
Brewer, J. W.....
National SoldiersHome, Maine
Chassell, J. L.....Bellefourche
Clough, F. E.....Lead
Crane, H. L.....Lead
Crouch, J. A.....Bellefourche
Ewald, P. P.....Lead
Fasser, A. O.....Bellefourche
Fleeger, R. B.....Lead
Freeman, J. W.....Lead
Hare, Carlyle.....Spearfish
Hargens, C. W. ....Hot Springs
Heinemann, A. A.....Wasta
Henning, A. J.....Kadoka
Hodges, V. R.....Lead
Holvey, R. E.....Lead
Howe, F. S.....Deadwood
Hultz, Eugene .....Hill City
Ince, H. J. T.....Rapid City
Jackson, A. S. .....Lead
Jackson, R. J. .....Rapid City
Lunn, J. O.....Edgemont
Martin, J. H.....Lead
Mattox, N. E.....Lead
Mesirow, M. E.....Wall
Miller, J. L.....Newell
Miller, George.....Spearfish
Minty, F. W.....Rapid City
Mitchell, Fred.....Newell
Morse, W. E.....Rapid City
Moffitt, T. W.....Deadwood
O'Toole, T. F. New Underwood
Owens, N. T. .....Rapid City
Pemberton, M. O.....Deadwood
Ramsey, Guy.....Philip
Richards, F. A. .....Sturgis
Schneerer, F. B.....Deadwood
Swafford, E. W.....Sturgis
Walsh, J. M.....Rapid City
Wilcox, H. H.....Hot Springs
Williamson, W. R.....Nemo
Yoskit, Harry.....Hot Springs
Young, B. A.....Hot Springs

ROSEBUD DISTRICT MEDICAL SOCIETY—NO. 10

PRESIDENT

Swett, C. H.....Winner

SECRETARY

Bryant, F. A.....Herrick

Bryant, F. A.....Herrick
Kenaston, H. R.....Bonesteel
Kimball, A. P.....Winner
Malster, R. M.....Carter
Murnan, H. A.....Winner
Quinn, R. J.....Burke
Swett, C. H.....Winner
Waterman, J. C.....Burke
Womeldorf, J. M.....Dallas

ALPHABETICAL ROSTER

Abbott, G. A.....Watertown
Adams, B. A.....Bristol
Adams, G. S.....Yankton
Adams, J. F.....Aberdeen
Aldrich, H. H.....Orient
Allison, B. S. .....Madison
Alway, R. D.....Aberdeen
Amesberry, A. L.....Carthage
Ash, J. C.....Garden City
Auld, C. V.....Plankinton
Baer, T. H.....Timberlake
Bailey, F. C.....Redfield
Baldwin, F. M.....Redfield
Ball, W. R.....Mitchell
Bartron, H. J.....Watertown
Bates, J. S.....Clear Lake
Bates, W. A.....Aberdeen
Baughman, D. S. .....Madison
Beall, L. F.....Irene
Beukelman, W. H.....Stickney
Bigler, Lottie .....Armour
Bilger, F. W.....Ardmore
Billion, T. J.....Sioux Falls
Billingsley, P. R...Sioux Falls
Blezek, F. M.....Tabor
Bliss, P. D.....Colton
Bobb, B. A.....Mitchell
Bobb, Clyde S.....Mitchell
Bobb, E. V.....Mitchell
Bonney, T. C.*.....Aberdeen
Bostrom, A. E. .....De Smet
Bower, C. F.....Hartford
Boutelle, L. E.....Clear Lake
Brandon, P. E.....Sioux Falls
Brewer, J. W.....
National SoldiersHome, Maine
Brosseau, J. E.....Frankfort
Brown, A. E.....Webster
Bruner, J. E.....Frederick
Bryant, F. A.....Herrick
Buffaloe, A. J.....Mitchell
Burkland, P. R.....Vermilion
Burlingame, R. M....Watertown
Burman, G. E. .....Carthage
Bushnell, Wm. F.....Elk Point
Campbell, R. F.....Watertown
Carpenter, G. S.....Bowdle
Carson, O. E.....Hecla
Chapman, W. S.....Redfield
Chase, A. E.....Northville
Chassell, J. L.....Bellefourche
Chichester, J. G.....Redfield
Cliff, F. N.....Milbank
Clough, F. E.....Lead
Cochran, F. B. .....Plankington
Cogswell, M. E.....Wolsey
Cook, J. F. D.....Langford
Cottam, G. G.....Sioux Falls
Countryman, G. E.....Aberdeen
Cowgill, C. H.....Iroquois
Crafts, Earl.....Scotland
Craig, D. W.....Sioux Falls
Crain, F. M.....Redfield
Cramer, L. L.....Viborg
Crane, H. L.....Lead
Crawford, R. A.....Chamberlain
Crawford, J. H.....Watertown
Creamer, F. H.....Dupree
Crecelius, H. A.....Volin
Crouch, J. A.....Bellefourche
Cruikshank, Thos. .....Vermilion
Culver, C. F.....Sioux Falls
Curtis, J. E.....Lemmon
Deertz, J. J.....Brentford
Delaney, W. A.....Mitchell
DeVall, F. C.....Garretson
Dinsmore, W. E.....Claremont
Donahoe, S. A.....Sioux Falls
Donahoe, W. E.....Sioux Falls
Duguid, J. O.....Springfield
Dunn, J. E.....Groton
Dyar, B. A.....De Smet
Eagan, J. B. .....Dell Rapids
Eagon, Alonzo .....Turton
Ebert, M. H.....Webster
Egan, M. H.....Sioux Falls
Ellis, John W.....Elk Point
Embree, V. W.....Yankton
Engh, H. A.....Watertown
Ewald, P. P.....Lead
Farnsworth, C. P.....Mitchell
Farrell, W. D. .....Aberdeen
Fasser, A. O.....Bellefourche
Fiksdal, M. J.....Webster
Finnerud, H. M.....Watertown
Fleeger, R. B.....Lead
Flett, Charles .....Milbank
Fox, C. F.....Mellette
Freeburg, H. M.....Watertown
Freeman, J. W.....Lead
Freyberg, F. W.....Aberdeen
Frink, O. G.....South Shore
Frink, R. P.....Wagner
Gage, E. E.....Sioux Falls
George, W. A.....Selby
Gerdes, O. H.....Eureka
Giere, E. O.....St. Paul, Minn.
Gifford, A. J. .....Alexandria
Gillis, F. D.....Mitchell
Gregg, J. B.....Sioux Falls
Gregory, D. A.....Sioux Falls
Green, B. T.....Brookings
Gross, C. C.....Yankton
Grosvenor, L. N.....Huron
Grove, A. F.....Dell Rapids
Grove, E. H.....Arlington
Grove, M. M.....Dell Rapids
Gueffroy, H. A.....Frankfort

*Honorary member.

Hammond, M. J.....Watertown
Hanson, O. L....Valley Springs
Haroldson, Olaf....Watertown
Hare, Carlyle.....Spearfish
Hargens, C. W. ....Hot Springs
Hart, B. M.....Onida
Hart, R. S.....Groton
Haskell, H. I. ..... Clark
Heinemann, A. A.....Wasta
Henning, A. J.....Kadoka
Hendricksen, Paul.....Vienna
Herman, H. J.....Webster
Hickman, G. L. .....Bryant
Hill, L. G.....Sioux Falls
Hill, Robert .....Ipswich
Hoaglund, C. C.....Madison
Hodges, V. R.....Lead
Hohf, J. A.....Yankton
Hohf, S. M.....Yankton
Holvey, R. E.....Lead
Hollister, C. M.....Pierre
Holmes, A. E.....Aberdeen
Holtz, Louis.....Aberdeen
Hopkins, N. K.....Arlington
Housman, W. McK..Sioux Falls
Hovde, C. H. R.....Madison
Howe, F. S.....Deadwood
Hultz, Eugene .....Hill City
Hummer, H. R.....Canton
Hunt, Wm.....Murdo
Hyden, A.....Alcester
Ince, H. J. T.....Rapid City
Isaac, J. P.....Freeman
Jackson, A. S. .....Lead
Jackson, E. B.....Aberdeen
Jackson, R. J. .....Rapid City
Jarvis, Abbie A.....Faulkton
Jamieson, G. V. .....DeSmet
Jenkins, P. B. .....Waubay
Jenkenson, H. E. .....
Wessington Springs
Johnson, A. Einar.....Watertown
Johnston, M. C.....Aberdeen
Jones, E. W.....Mitchell
Jones, R. R. .....Britton
Jones, T. D.....Bowdle
Jones, T. E.....Sioux Falls
Jordan, A. A.....Hudson
Jordan, L. E.....Chester
Kammerling, T. S.....Spencer
Kauffman, E. J.....Marion
Keeling, C. M.....Springfield
Keller, S. A.....Sioux Falls
Keller, W. F.....Sioux Falls
Kellogg, H. E.....Madison
Kelly, R. A.....Mitchell
Kenaston, H. R.....Bonesteel
Kenney, H. T.....Watertown
Kidd, F. S. .....Woonsocket
Kimball, A. P.....Winner
Kimble, O. A.....Murdo
King, H. I.....Aberdeen
King, Owen .....Aberdeen
Klaveness, E..Minneapolis, Minn.
Kleger, S. A.....Mellette
Klima, Hermenegild .....Tyndall
Koobs, H. J. G.....Mitchell
Koren, Finn .....Watertown
Kraushaar, F. J.....Aberdeen
Kutnewsky, J. K.....Redfield
Landmann, G. A.....Scotland
Langley, C. S.....Lake Andes
Langsdale, G. H.....Highmore
Launspach, G. W.....Huron
Lavery, C. J.....Aberdeen
Leach, W. O.....Huron
Lee, J. O.....Mt. Vernon
Lockwood, J. H.....Henry
Longstreth, W. I.....Sisseton
Lowe, C. .....Mobridge
Lowthian, G. H.....Milbank
Lull, Sherman .....Waubay
Lunn, J. O.....Edgemont
Lundquist, C. C.....Leola
McCauley, C. E.....Aberdeen
McComb, T. T. .....Letcher
McClellan, C. B.....Kennebec
McGarvey, F. B.....Cavour
McKie, J. F.....Wessington
McIntyre, P. S.....Bradley
McLaurin, A. A.....Pierre
McManus, Clara..Gann Valley
McWhorter, Port.....Miller
Magee, W. G.....Watertown
Malster, R. M.....Carter
Martin, H. B.....Harrold
Martin, J. H.....Lead
Mattox, N. E.....Lead
Maytum, W. J.....Alexandria
Mertens, J. J.....Gettysburg
Mesirow, M. E.....Wall
Michael, L. F.....Gettysburg
Miller, J. L.....Newell
Miller, E. C. .....Brookings
Miller, Frank.....Aberdeen
Miller, George.....Spearfish
Miller, J. F.....Andover
Minard, R. W.....Midland
Minty, F. W.....Rapid City
Mitchell, Fred.....Newell
Mizner, Mark .....Parkston
Moe, A. J. .....Sioux Falls
Moffitt, T. W.....Deadwood
Moore, D. V.....Yankton
Moore, F. A.....Lesterville
Moore, W. E.....Sioux Falls
Morehouse, E. M.....Yankton
Morrisey, R. J.....Ft. Pierre
Morse, W. E.....Rapid City
Mullen, R. W. ....Sioux Falls
Murdy, B. C.....Aberdeen
Murdy, R. L.....Aberdeen
Murnan, H. A.....Winner
Murphy, T. W. .....Pierpont
Nessa, N. J.....Sioux Falls
Newby, H. D.....Parker
Noble, H. B.....Howard
Northrup, F. D. .....Draper
O'Toole, T. F. New Underwood
Olson, C. O.....Groton
Owens, N. T. .....Rapid City
Paddleford, J. F. .....Miller
Parke, L. L. .....Canton
Parsons, H. C.....Watertown
Parsons, J. G.....Sioux Falls
Payne, R. H.....Tripp
Peabody, H. C.....Webster
Peabody, Percy .....Webster
Pearson, A. W.....Peever
Pemberton, M. O.....Deadwood
Perkins, E. L.....Sioux Falls
Potter, Geo. W.....Redfield
Posthuma, Anne .....Centerville
Preston, P. J. .....Watertown
Putnam, E. D.....Sioux Falls
Putnam, F. I.....Sioux Falls
Quinn, R. J.....Burke
Ramsey, E. T.....Clark
Ramsey, Guy.....Philip
Ranney, T. P.....Aberdeen
Reagan, R.....Sioux Falls
Rice, D. B. .....Aberdeen
Richards, G. H.....Watertown
Richards, F. A. .....Sturgis
Rider, A. S.....Flandreau
Riggs, T. F.....Pierre
Roane, James .....Yankton
Roberts, W. B.....Sioux Falls
Rock, H. J. .....Sioux Falls
Rogers, J. C.....White Lake
Rosenthal, S.....Aberdeen
Rowe, A. N. .....Estelline
Rundlett, D. L.....Sioux Falls
Sackett, Roy.....Parker
Saxton, H. W. .....Huron
Saylor, H. L. .....Huron
Scheib, A. P. .....Hitchcock
Schneerer, F. B.....Deadwood
Schwartz, Jos.....Sioux Falls
Schwendener, J. E.....Bryant
Siedenberg, F.....Sioux Falls
Senescall, C. R.....Veblen
Sewell, H. D.....Huron
Sheets, O. B.....Carthage
Sherwood, C. E. .....Watertown
Sherwood, H. H.....Humbolt
Sherwood, H. W.....Doland
Shirley, J. C.....Huron
Smedley, Irene.....Sioux Falls
Smiley, T. B.....Mt. Vernon
Smith, F. C.....Yankton
Smith, S. W. .....Watertown
Sornsen, A. A.....Aberdeen
Spafford, F. A.....Flandreau
Sprague, B. H.....Huron
Sprecher, Samuel.....Tripp
Staley, F. H. .....Vienna
Stansbury, E. M. .....Vermilion
Stenberg, E. S.....Sioux Falls
Stern, M. A.....Sioux Falls
Stevens, R. G.....Sioux Falls
Stevens, G. A.....Sioux Falls
Stewart, J. L.....Lead
Stiffler, M. L.....Yankton
Stockdale, C. P.....Ethan
Struble, A. J.....Centerville
Sutton, Dewey.....Redfield
Swafford, E. W.....Sturgis
Swett, C. H.....Winner
Swezey, F. A.....Wakonda
Tarbell, H. A.....Watertown
Taylor, E. B.....Huron
Templeton, C. V...Woonsocket
Thomas, Benj. .....Huron
Thompson, T. G.....Sioux Falls
Torwick, E. E.....Volga
Treon, Fred.....Chamberlain
Tschetter, J. S.....Huron

Tufts, A. H.....Sioux Falls
Twining, G. H.....Mobridge
Van Demark, G. E...Sioux Falls
Vangsness, I. U. .....Beresford
Vaughn, J. B.....Castlewood
Waldner, J. L. .....Parkston
Wallis, S. R.....Mitchell
Walsh, J. M.....Rapid City
Waterman, J. C.....Burke
Weishaar, C. H.....Aberdeen
Westaby, J. R. .....Madison
Westaby, R. S.....Madison
Wheelock, D. O.....Miller
White, W. E.....Ipswich
Whiteside, J. D.....Aberdeen
Whitney, L. D.....Aberdeen
Wilcox, H. H.....Hot Springs
Williamson, W. R.....Nemo
Willhite, F. V.....Yankton
Wilson, R. D.....Aberdeen
Winsett,W. E.....Sioux Falls
Wipf, A. A.....Freeman
Womeldorf, J. M. .....Dallas
Wood, T. J.....Huron
Wright, O. R.....Huron
Yoskit, Harry.....Hot Springs
Young, B. A.....Hot Springs
Zetlitz, Arne.....Sioux Falls
Zetlitz, K. A. L.....Sioux Falls
Zimmerman, Goldie...Sioux Falls

MEDICAL PROGRESS: PRESIDENT'S ADDRESS*

By Harry T. Kenney, M. D.
WATERTOWN, S.D.

PURPOSES OF THE ASSOCIATION

The purpose of this Association is not to meet once a year just to shake hands with our brother "docs" and look over the instruments, the new drugs, and the *x*-ray that will be on exhibition, or just to attend the annual banquet, but we are here for another and a definite purpose. That purpose is, to quote the Constitution, "to extend medical knowledge and advance medical science; to elevate the standard of medical education, and to secure the enactment and enforcement of just medical laws; to promote friendly intercourse among physicians; to guard and foster the material interests of its members and to protect them against imposition; and to enlighten and direct public opinion in regard to the great problems of state medicine, so that the profession shall become useful to the public, in the prevention and cure of disease, and in prolonging and adding comfort to life."

A FULL-TIME SECRETARY

My predeceessor in office, Dr. R. D. Alway, of this city, made a strong plea a year ago for the necessity of a full-time secretary. This I believe is absolutely essential for the proper growth of this Asssociation. We need a man who will give his undivided attention to the upbuilding of this organization. It is absolutely necessary in all lines of development and for the proper organization to carry on the same, and the physician must realize that he is not able to stand alone, as it were, but must join with his brother practitioners for the protection of himself, if he expects to keep the position in the community to which by education and training he is entitled.

LIQUOR PRESCRIPTIONS

In regard to writing liquor perscriptions: This has done more to belittle the profession than anything that has been done in the last decade. I believe it is time to put a stop to prostituting the profession in this way. The handing out of liquor should be done by the officers of the law and the druggists who handle it. It is a disgrace to the profession to ask us to make a physical examination in order that we may issue a booze prescription. Before the days of prohibition the laity used quinine, whiskey, beer, or whatever it may have been before they thought of calling a doctor, but now they must go through the formality of a psudo-examination. This may seem like a joke, but, ladies and gentlemen, it is a tragedy.

FEE-SPLITTING

There has been a great deal said about the splitting of fees. This has been one bone of contention between the general practitioner and the specialist. Most of the specialists are opposed to the system on the ground that is commercializing medicine and has a tendency to induce the general practitioner to send his patients to the man giving him the largest fees. On the other hand, the doctor in charge of the case feels that the family depends on him and that as he is taking part of the responsibility, he is therefore justly entitled to a portion of the total surgical fee. It has been my observation that there is not so much harm in splitting of the fees as

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in the sub-rosa splitting. In other words when the patient and the relatives are informed that the family physician is to receive a certain portion of the fee, and, knowing that the specialist has not added this to his regular bill, and has recognized the general practitioner for the efforts he has put forth in the case, I do not believe any harm comes of it, because while all of our great specialists have referred work, still, after their practice is established the referred work comes mostly from satisfied patients.

The Mayo Clinic furnishes an example. This I believe, is an honorable means and very much more honorable than using a church or a society for the same purpose which so many of our so-called leaders do.

A high-class Christian graft should be considered in the same light as any other graft.

THE DOCTOR'S CALLING

The doctor must educate the people to the fact that he is not calling at so much per call, but when called he takes charge of the case. This is an attitude that is taken by too many of our profession, and it puts us on a level with the taxi-cab driver. And while on this subject I wish to draw your attention to the fact that fees should be charged accordingly, the fee table being used only as a guide. Where this is done the public realizes that your service to them is more than just a fee. Your fee should be for the care of the patient and not for any particular thing that you have done. For example, for the repair of a broken bone the fee table may call for a charge of $75.00. This does not merely mean pulling the bone straight and fixing it on the splint, but it means the care of that injury during the period of healing and the education of the man back to the use of the injured member. This very often applies to a certain class of the cases where a doctor has rendered first aid and he feels that he is fully entitled to the fees for the care of the limb to its ultimate recovery. This would not happen if the doctors would consider their cases not at so much "per," but by the general supervision of that patient during the full period.

"STATE MEDICINE"

The great alarm of our sister states over "state medicine" will not effect us for a great many years, for we have no large cities or large industrial corporations, save one, in the entire state. However, it will be necessary for us to protect ourselves against state health insurance laws in regard to a certain class of work. We are, however, confronted by two or three organizations under the guise of a lodge, the members of which employ doctors to care for their families at so much a head. This, I believe to be detrimental and disgraceful to the medical profession to accept these appointments. If you were to go to the butcher's, baker's, plumber's, etc., who are in these organizations and ask them to sell their goods or render their services at a lower price they would consider it riduculous. We should take the same attitude. If you wish to render free service to the poor do so, but do not give your services to people who are perfectly capable of paying in order to get their business. I believe the doctors of this state should be above these things.

THE CLINIC, OR GROUP MEDICINE

The wonderful advance in the armamentarium for diagnosis and treatment of disease and the futile attempts of the single individual have naturally brought together physicians into the clinic, the group, or the community practice. No doctor of to-day is doing his duty to his patient or to himself unless he has at his disposal the findings of high-class technicians in *x*-ray and general laboratory work. The county or community hospital well equipped with *x*-ray and laboratories with skilled technicians will, I believe, be the solution to the problem in this state and give to every practitioner a place where he can take his patient for the examination and treatment to which he is entitled. In the clinic, or group practice, there are quite a few objectionable features which must be worked out in each community, but the individual must realize that the old system will not suffice. In these days of good roads and automobiles if the patient cannot get the proper treatment where he lives he is bound to go elsewhere. When the clinic is organized on the "stock-yard" plan and for mercenary purposes it becomes very harmful; however, when the clinic is run along ethical lines for the purpose of doing better work, it is a power for good in the community.

THE DOCTOR IN POLITICS

It has been a sort of legend that doctors should take no active part in the city, county, or state government, for to do so would brand him as a politician and necessarily ruin his practice. This condition, however, has been brought about by the doctors themselves on account of the attitude they have taken toward each other. The disre-

spect shown us by the laity is merely a reflection of the disrespect we show each other. We have always been afraid to assert ourselves as a body feeling that the laity would be against us. We should dispel our minds of this, for, when they discover that we are united in action on any subject, we shall get their support on matters for the betterment of the profession.

Representing the 23rd District in the Senate during the last session and watching the actions of our friends, the Chiropractors, the Christian Scientists, and other cults who are trying to get a foothold in the state, I am of the firm conviction that only united effort on our part will keep the medical profession on a high standard and prevent the quacks, charlatans, and psuedo-religious cults from dominating our legislative bodies. The following bills were introduced and defeated:

House Bill No. 15, which was designed to give the Chiropractors and Christian Scientists and others use of the general and private hospitals in the state.

Senate Bill No. 32, providing preliminary examination of all persons who may desire to practice medicine, surgery, osteopathy, or any other form of the healing art in the state of South Dakota, passed the Senate, but was lost in the House due to the combined action of the Christian Scientists, Chiropractors, and Osteopaths—the latter body, however, being misinformed in regard to the contents of the bill.

House Bill No. 269 was defeated, to prevent a Board of Chiropody in the state of South Dakota.

Senate Bill No. 289, an act appropriating money for the Child Welfare Commission, was passed by both the House and the Senate, but was vetoed by the Governor.

Our Model Vital Statistic Bill passed the Senate as usual, but again failed in the House.

The Eugenic Bill introduced by Mr. Swanson of Aberdeen was defeated by the combined efforts of the Chiropractors and Christian Scientists, aided and abetted by the Speaker of the House, who was careful to see that only friends of the Chiropractors were put on the Committee of Medicine and Surgery. This bill, however, I believe could have been amended and passed had it been given fair consideration.

House Bill No. 68, introduced by Mr. Parliman of Minnehaha, to register the Chiropractors, passed in the House by a large majority, but when it reached the Senate was amended after a hard fight, so that their course must cover three years of eight months each and not allowing them to treat contagious or infectious diseases or to practice obstetrics.

House Bill No. 176, an act to appropriate money for deficiency in fund for printing and necessary publications for the Board of Health, and No. 238, relating to compensation to the members of the State Board of Health, passed, as did Senate Bills No. 62, relating to fees for reporting vital statistics; No. 146, relating to the Child Welfare Committees; No. 221, relating to reciprocity with other states in the matter of Medical Licensure Fee; and No. 284, providing for the creation of County Boards of Health.

We received splendid support from Senators Danforth, Schaber, Lincoln, Knight, Bartels, Guilfoyle, Gunvordahl, Crawford, and Schriber. We are under obligations to Senator Bill Knight for his counsel and untiring effort for everything that would advance the medical profession.

A friend of mine, who was a court reporter for a great many years and who is now a prominent attorney, has made a study of the doctor in court and has this to say: "The average doctor used as an expert is a joke, and is prone to give a biased opinion on the side he is employed. This has a tendency to cheapen him in the minds of the laity. This could be obviated by the doctors being called by the court for all expert advice in the court-room."

In closing, I wish to say that only the united effort of the medical profession will keep the standard of our profession up to the place it is justly entitled to.

DUODENAL ULCER: MEDICAL TREATMENT IN AMBULANT CASES

By Charles Benjamin Wright, M. D.
MINNEAPOLIS

We are still looking at ulcers from a standpoint of treatment, as we did fifteen years ago, although we know now that a very large number of duodenal ulcers were entirely missed and were treated for years for such conditions as neuralgia of the stomach, hyperacidity, nervous dyspepsia, etc. Ulcer treatments were only for the cases with complications, such as hemorrhage, or obstruction, or perigastric inflammation.

I feel sure an adjustment of our standards has not been made for the proper evaluation of the large and increasing number of simple ulcers we find to-day by more accurate methods of diagnosis. In addition to easier recognition, by these same methods we have been able to classify ulcers.

From the standpoint of treatment, the most satisfactory division is the simple ulcer and the ulcer with complication. I mean by the complicated ulcer the penetrating or perforating type, the cases with marked retention, which may be due to pylorospasm and gastric muscle-decompensation, or to organic obstruction; the bleeding ulcer or the ulcer with a history of hemorrhages; ulcers with any suggestion of malignancy, which practically applies only to gastric ulcer, as cancer of the duodenum is very rare; cases with Glenard's, marked anemia, loss of weight, or other general complications.

The simple ulcer, on the other hand, has none of these characteristics, and comes essentially for the relief of pain and its accompaniments, as moderate loss of weight due to fear of pain after eating, possibly occasional vomiting, sour regurgitation, heartburn, nervousness, sleeplessness, etc.

One must admit that there is the inherent possibility of simple ulcer becoming complicated, but observation on about 1,000 ulcers of all types over a period of five years has convinced me that with any kind of intelligent treatment and proper coöperation on the part of the patient, the danger of these accidents is exceedingly small, if any at all. Then there is the appreciable group of cases, (I would put this, conservatively, at 10 per cent in competent hands, much larger under ordinary technic) diagnosed ulcer which are due to extragastric conditions, such, as gall-bladder, chronic appendicitis, pelvic inflamation, colon irritation, nephrolithiases and neuro-syphilis, that certainly demand treatment and observation at least until the true pathology is revealed. We seldom see a patient in the dispensary who has had any abdominal discomfort over any period of time who cannot show one or more abdominal scars.

The profession is coming more and more to feel, I believe, that simple ulcer is entirely a medical condition, and conservative surgeons are doing more to mould this opinion than any other group. Further, our conception of ulcer as a clinical entity is changing. That ulcers of the stomach and duodenum are only a manifestation of some remote pathological condition is a conception which seems more rational than any which hitherto has been advanced, and the direct infection of the injured mucosa during temporary intervals of subacidity or anacidity, as suggested by Ivy, must be considered, as well as the focal infective origin, so ably championed by Dr. Rosenow. I have not yet reached that state of focal-infective frenzy where I can feel that ulcers will disappear with the pulling of a devitalized tooth, yet I am convinced that we are neglecting very seriously our ulcer patients if we do not search for and carefully eradicate definite sources of infection. This at least puts the patient in a better condition for healing and, undoubtedly, prevents future ulcers.

Another point I wish to bring out especially is the appearance of extreme hypersecretion and hyperacidity in ulcer cases, and to call attention to the fact that this is not necessarily due solely to the presence of ulcer. The necessity of taking large amounts of alkalis has been advanced as a reason for surgery. One patient I followed in the dispensary had two six-week bed treatments under careful Sippy regulations, with careful observation, afterwards consumed eighteen pounds of soda in nine months. For this reason he was operated on with temporary relief. He came back one year later with the same burning pain, and showed very high-acid values. He still takes his soda, although his stomach was apparently functioning normally. I now have another patient on whom a frank diagnosis of duodenal ulcer was made. He responded well to the treatment two years ago in the hospital, but has contimed to take a great deal of alkali recently, although he showed no evidence of ulcer clinically or by *x*-ray, he had a free HCl of 59 on the fasting stomach and 140 after an Ewald, al-

*Presented at Minneapolis Clinic Week, Minneapolis, April 27, 1921.

though there was no food retention, and only 40 c. c. were recovered after an Ewald. In addition, he has a slow pulse and constipation, which is apparently of the spastic type. I believe atropine in this type of case is strongly indicated, given separately and to the point of definite physiological effect, as we are, undoubtedly, dealing with vagotonia.

Hypersecretion and hyperacidity are also met with in early tabetics accompanied by the diagnosis of ulcer incorrectly made. Continuous hypersecretion and hyperacidity are met with also in tobacco and snuff chewers, also in very heavy smokers, and in individuals swallowing pus from upper respiratory infections and are often associated with a mild degree of retention due to pylorospasm or muscle weakness.

In the handling of a large number of dispensary cases we have found that the complicated ulcers easily submit to hospitalization, as they are usually incapcitated to such an extent that they are willing and eager to go to the hospital.

Simple ulcer patients, however, are working and have dependants, and they often refuse and we feel that it is often advisable, at least, to try a form of treatment that will not take them away from their work, which may mean losing a good job, and may throw their dependants on charity. We also have the cases to treat that come from the hospital after a shorter or longer period of bed treament, and we have found that our results, in a large proportion of cases, give relief and, unquestionably, in many give permanent relief.

In gastric patients we first give a thorough general examination, including the laboratory. They are also sent to a stomatology clinic, where the mouth and throat and sinuses are thoroughly gone over and treatment indicated. Then, after a careful abdominal scrutiny, they are *x*-rayed, and a decision is made as to whether the ulcer is amenable to ambulant treatment or not.

We exclude all the cases with a history of hemorrhage, all cases with six hour residues of any extent, all ulcers that are penetrating, all cases with marked loss of weight, with Glenard's or anemia, or any other condition demanding general rest. Another class of cases that we do not care to treat on their feet, are night workers. We have found that men who work at night do not do well. Where possible we allow three meals a day, and have the patient take a bottle of half milk and half cream to work, taking about one-half glass every hour.

The meals at first consist of—

For breakfast, cereals (cream of wheat, farina), milk toast, and unsalted butter.

For dinner, mashed vegetables (potatoes, squash, carrots, peas), stale bread and butter, cottage cheese, soft boiled or poached eggs, gelatine.

For supper, same as for dinner.

If things go well we increase this in two or three weeks by the addition of fish or chicken, simple desserts, like tapioca, stewed fruit, cream cheese.

The diet must be carefully watched. In many cases these patients cannot carry milk or cream with them. We often simply have them take a bread-and-butter sandwich and a glass of milk in the middle of the forenoon and the middle of the afternoon and at bedtime.

The most important thing of all is not to make your treatment more complicated than the patient can follow. As for alkalis, here again we make medication as simple as possible.

The prescription we usually start with is as follows:

Mag. oxid. I. Sod. bicarb II. Bis. subcarb I. We give one half teaspoonful of this, and if this is too laxative we add more bismuth subcarbonate or calcium carbonate. We insist on regular return for observation.

After any kind of treatment, ulcer patients should not be told they are cured. They should report frequently and continue on their treatment indefinitely.

I think the importance of acid control in this type of case has been greatly exaggerated, as I have seen cases go on apparently to cure, both by *x*-ray and symptomatically, and remain so where I know the acid was never controlled at any time; and I feel that the frequent passing of a tube in cases without retention does more harm than good, especially in neurotic individuals.

To sum up: I would emphasize three points: first, the careful elimination of all the foci of infection, both open and closed; second, the careful selection of our cases for ambulant treatment; third, the importance of constant supervision and long-continued observation; fourth, the simplification of treatment as much as possible to fit the patient, so that he may follow it indefinitely.

THE
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SOME PLAIN TRUTHS

Dr. H. T. Kenney, in his presidential address before the South Dakota State Medical Association, published on another page of this issue, uttered some facts which, although neither new nor dressed in new or striking language, are telling because of their bluntness and because of their growing importance. It is only by the constant reiteration of some truths that they can be impressed upon a mass of men—in this case professional men, whose pride in their profession should be great enough to impel them to stop and consider.

THE JOURNAL-LANCET takes no pleasure in dwelling upon things that are not creditable to medical men, neither does a physician find pleasure in resorting to drastic measures to accomplish a great end, even the preservation of health or life; but unpleasant things must be said and done when occasion requires, so we call attention to Dr. Kenney's address for a good purpose,—that is, the preservation of the health of the medical profession.

THE SMITH-INDIAN CATARACT OPERATION

The visit of Lieut.-Col. Henry Smith, of London and India, to the United States, is of particular interest to the profession because he bring to this country a wealth of clinical and surgical experience in cataracts, which has never before been the fortune of any other man to gain in the history of medicine, and, in all probability, will never be equaled.

He emphasizes the importance for the general practitioner to train himself so that he may be able to make an early diagnosis of beginning cataractous changes in the lens. This change is first noticed by the patient, who comes complaining of a slight fogginess or cloud before the vision. If this is immediately met by intelligent sub-conjunctival injections of solutions of cyanide of mercury the cloudiness may be cleared and the process stopped. If, however, the diagnosis is not made in the early stages, and the vision is decreased to 20/40, or more, then the operation for extraction of the lens must be considered.

The conservative traditional operation for cataract extraction, simply described, is as follows: incision for the corneal flap; iridectomy; rupture of the capsule by cystotome or capsule forceps; expulsion of the lens by pressure on the globe; replacement of the corneal flap; toilet of the wound; bandage and rest in bed. The so-called Smith-Indian operation does not differ from the one just outlined in any step except the rupture of the capsule of the lens. When the point is reached in the operation where the operator ruptures the anterior capsule of the lens by cystotome or forceps, Smith, instead of doing this, exerts pressure upon the eyeball in the lower segment of the cornea, and, instead of rupturing the capsule, he ruptures the suspensory ligament which supports the lens in its capsule, and the lens is expelled from the globe with the capsule intact.

The object of this is obvious, in that it removes from the globe all of the lens and lens matter and all of the capsule, both anterior and posterior. This eliminates post-operative inflammations and secondary cataracts, which are very prone to occur if any lens matter and capsule are left. The danger of such expulsion is the loss of vitreous, which is to present itself more often than in the traditional operation because the posterior capsule and suspensory ligament are left to support and retain the vitreous in the latter operation. European and American surgeons fear and dislike the loss of vitreous. They, therefore, feel that it is wiser and safer to take less chance of its occuring. Smith claims that with his method under skilled hands the loss of vitreous, if it occurs even to a considerable

degree, is better than the many post-operative complications, inflammations, and secondary cataractous deposits which occur so often in the conservative operation. This, no doubt, is true under his skilled hands, but whether or not it is advisable for the profession as a whole to adopt the Smith-Indian method of extraction, without having the opportunity of a long training such as Smith has had, is questionable. Statistics of the two methods apparently show, according to Smith, that about 84 per cent of the conservative operations obtain useful vision, and 94 per cent of the Smith-Indian.

Col. Smith comes to America to demonstrate to the profession that his method is the better. He has held clinics in may of our large cities and is still doing so. The result of his work will, of course, be published in due time, and will speak for itself.

The recent clinic held in St. Paul, at which time 78 extractions were performed, was, up to that time, the largest that had ever been held.

Col. Smith is making this tour at his own expense and is giving his services to the people and his knowledge to the profession because he feels that his wonderful opportunity of gaining such a wealth of knowledge and skill in his Indian medical service has made it an imperative duty for him to demonstrate to medical men what he has learned from it.

THE GOVERNMENT HOSPITAL CONTROVERSY

The development of an idea is inevitably followed by a change in viewpoint. This we find in medicine in its modern application, and in surgery in its modified judgments. The surgeon who is able to progress is the man who is able to change his mind, and he sees his errors as the years go by and his surgical judgment becomes more acute and probably more valuable. So it is with the establishment of a Government hospital. It was done with an ultimate object in mind,—the care of the disabled soldier; and, although the activity of the Government was seemingly slow, it finally developed into the care of soldiers in various parts of the country, the acquisition and development of hospitals of all kinds, medical, surgical, neuropsychiatric, and so on. Then came the necessity of providing proper officers for Government hospitals. This was also done, and, so far as one can learn, the directors and officers of hospitals have been eminently successful. But the Government held a very rigid hand over the entire hospital situation, in fact over all the United States Public Health Service problems. It was so exacting in its demands that it was very difficult for a soldier to have a tooth pulled until he had been officially examined by means of the *x*-ray. His films were then sent to Washington for examination, regardless of the absence of the patient. And after a due course of time, thirty or forty days, the film was returned with instructions as to what treatment this tooth should enjoy.

The above holds true in regard to other problems. The Government is still unwilling to relax its paternal influence over these hospitals, but maintains a firm grasp of the management, discipline, and general deportment of the officers. It has softened a little, however, in its attitude toward the care of the soldiers, and recently there has arisen in Congress an effort to eliminate military discipline from military hospitals. It is rather curious to note that good arguments and good men are found on both sides. It was suggested by a neuropsychiatrist in Washington that the soldiers be treated more as civilians, and the discipline relaxed. To one who has had the opportunity to observe the care of the soldiers this seems a peculiar announcement, and it is one which will affect the entire discipline of all hospitals, and not alone the Government hospitals, if the Government hospitals recede one point.

The average soldier who comes into a Government hospital has been under, and is accustomed to, United States Public Health Service discipline, and why he should be relieved from this simply because the war is over and the hospital is conducted on hospital lines is rather a startling problem. The greatest difficulty all hospitals have,—whether private, secular, or public hospitals,—is the maintenance of discipline over paients; and the aim of experienced hospital men is, not only to keep the patients comfortable and care for them, but to keep them under a discipline which is the basis of all hospital management. The idea that hospital patients should be entertained, amused, and distracted from their many ills is laudable, perhaps, but it is not practical. Sufficient diversion should be permitted, but, when carried too far, it means that all discipline practically ceases.

It is well known among medical men that the medical, and even the surgical, patient, to say nothing of the neuropsychiatric patient, should live under an entirely different order from that which he is accustomed to at home. Then, too,

the mere fact that he has contracted his illness or infirmity away from home, or even at home, is no reason why his conduct in the hospital should follow his line of conduct at home. It is also a well-known fact that many soldiers in hospitals are still objecting to their care and treatment. They almost act in an advisory capacity to the superintendent and his assistants, and sometimes the superintendent is afraid to maintain his own idea of things and his own disciplinary measures for fear the soldiers may be offended. That is not the writer's idea. From many years of experience it would seem that a degree of discipline which may seem almost severe or may be almost military-like, is of great advantage to the soldier in his illness, and it is of equal value to the civilian to be told what to do and how to do it, and then see that he follows instructions.

If the United States Public Health Service in Washington would allow the superintendents of the various hospitals a little latitude and an opportunity to use their own discretion, there would be less of this controversy and less delay in every way. The paternalistic idea, however, is one that dies hard, particularly when the Government is the pater familias. For the good of the soldier and for the good of the civilian it is to be hoped that hospital discipline may be increased rather than modified, and for the good of the Government hospital it is sincerely to be hoped that the military discipline will prevail.

NEWS ITEMS

Twenty-five Fellows entered service in the Mayo Foundation July 1.

Dr. W. C. Barton has moved from Belcourt, N. D., to Anadarko, Oklahoma.

Dr. H. C. Norriss has moved from Pingree, N. D., to Sharon, N. D.

Dr. F. T. Leatherwood has moved from Minot, N. D., to Memphis, Tenn.

Dr. W. J. Cochrane, of Minneapolis, has moved to Monticello, Iowa.

Dr. W. H. Barr, of Wells, was married last month to Miss Estella Maust, of the same city.

Dr. J. W. Doyle, of Minneapolis, has located at Buffalo.

Dr. H. Longstreet Taylor, of St. Paul, has gone to Europe, and will return in November.

Dr. O. E. Distad, formerly of Williston, N. D., died in China of typhoid fever last month.

Dr. H. T. Kenney, of Watertown, S. D., formerly of Pierre, S. D., was married last month to Miss Agnes Smith of Pierre.

Dr. A. E. Wilcox, of Minneapolis, has been appointed a member of the Minneapolis Board of Public Welfare.

Dr. Andrew S. MacDougall, of Lewistown, Montana, was married last month to Miss Muriel Grant, of Anaconda.

Dr. C. G. Salt, a recent graduate of the University of Minnesota, will take over the practice of the late Dr. Armitage, of Princeton.

Dr. Rolla I. Stewart, of Wendell, was married last month to Miss Clarice Adelia Sletton, of Elbow Lake.

Dr. John Mills, who graduated from the Medical School of the University of Minnesota, has become associated with Dr. M. M. Hursh, of Grand Rapids.

Dr. Rolfe Tainter, of Chicago, has located in Fargo, N. D. Dr. Tainter is a graduate of Northwestern, and is an eye, ear, nose and throat specialist.

Dr. A. J. Paulson, formerly of Thief River Falls, Minn., now of Watertown, S. D., was married last month to Miss Mina Nelson, of Devils Lake, N. D.

Dr. W. J. Mayo has recently been elected an honorary member of the Medico-Chirugical Society of Edinburgh. The honorary membership of this society is limited to ten.

They are majoring in the following: general medicine 10, general surgery 4, orthopaedic surgery 1, ophthalmology 1, otolaryngology 1, pediatrics 2, dermatology 2, and dental surgery 4.

Dr. William J. Moore, of Adams, died in June Dr. Moore graduated at Bennett with class of '93, and came to Minnesota the same year to begin practice.

Dr. James Halliday, of Mohall, N. D., died last month. Dr. Halliday had practiced in North Dakota about thirty years, going to the state from London, Ontario, where he graduated in medicine.

Dr. Alexander Stewart, a Fellow in Pediatrics in the Medical School of the University of Minnesota, who has just completed six months' service in the Mayo Foundation, has become associated with Dr. W. R. Ramsey, of St. Paul.

The Southern Minnesota Medical Association held its midsummer meeting in Winona last

month with a somewhat smaller attendance than this live society generally attracts, and with a program not so varied as usual.

All the tuberculous school children of Minneapolis are to be given an intensive examination under the supervision of the City Health Commissioner, followed by proper treatment in Lymanhurst or Hopewell Hospitals.

An epidemic of spinal meningitis in Wadena County, Minn., which started last month, caused the State Board of Health considerable anxiety. Over thirty persons had the disease, and there were some deaths.

Dr. Wallace Calvin Abbott, of Chicago, a pioneer in the field of alkaloidal medication, editor-in-chief of the American Journal of Clinical Medicine, and founder of the Abbott Alkaloidal Company (now The Abbott Laboratories) died on July 4, at the age of 64.

The after-care of cases of poleomyelitis in Minnesota has been transferred from the State Board of Health to the State Hospital for Indigent Crippled and Deformed Children. The Division of Preventable Diseases will, however, look after frank and suspected cases.

Dr. Harry T. Kenney of South Dakota spent a busy and profitable month from the latter part of May to the latter part of June. He presided at the meeting of the South Dakota State Medical Association, delivered a vigorous presidential address, got married, and moved from Pierre to Watertown.

The nurse who began suit against the Methodist State Hospital at Mitchell, S. D., because she was not given a diploma in June, promptly withdrew her suit and made a public apology when she and her attorney learned that she was not entitled to a diploma, not having completed the required course.

"The Minnesota General Hospital" came into existence on July 1 under an act of our recent legislature. This is the new name for the hospital equipment of the State University, to which any county in the state may send its indigent patients, the county paying one-half the cost of their care.

Col. Smith gave the visiting physicians to his eye clinic in St. Paul last month a decided surprise. While performing seventy-eight cataract operations in one day he smoked almost continuously and apparently disregarded not a few rules of aseptic procedure; but nothing except his instruments touched the patient's eye.

Dr. A. S. Hoiland, who has practiced nine years in Argyle, has sold his practice to Dr. A. H. Nerad, his associate. Dr. Hoiland was married last month to Miss Clara E. Overby, and has gone to Chicago to take a postgraduate course in eye, ear, nose and throat work, after the completion of which he will locate in Minneapolis.

Dr. Archibald C. Fairbairn, a pioneer Physician of Minnesota, died last week at the age of 78. Dr. Fairbairn did postgraduate work in Edinburgh and visited the hospitals of London, Paris and Vienna. He came to Minneapolis in 1876, and at once became prominent in surgery and general medicine. He was chief surgeon of the Northern Pacific for a number of years. He was president of the Hennepin County Medical Society for three terms. He retired from practice in 1890 because of poor health.

The Brown-Redwood County Medical Society, which was expelled from the State Medical Association for its failure to discipline Dr. J. A. Fritsche, of New Ulm, because of disloyalty to the Government, has brought suit to compel the State Association to reinstate it. The action is based upon the ground that Dr. Fritsche was investigated by the State Public Safety Commission and not found guilty of the charges.

One of the distinctive features of the program of the Catholic Hospital Association meeting at St. Thomas College in St. Paul last month, was a model hospital staff meeting. Dr. H. B. Sweetser, of Minneapolis, presided, and Dr. Frank Jennings, of Brooklyn, N. Y., had charge of the "staff meeting," which was a model of what every "standard" hospital of the future will require of its staff once a month in public interest.

Dr. A. J. Paulson, for the last five years associated with the Clinic at Thief River Falls, Minn., has now become a member of the Watertown Clinic, Watertown, S. D., where he has already taken up his duties. The Doctor's work in his new association will be surgical, and he has been appointed a member of the Surgical Staff of Luther Hospital of that city. The other members of the Watertown Clinic are Dr. A. Einer Johnson, Dr. Finn Koren, and Dr. W. G. Magee.

The Redwood-Brown Medical Society held its annual meeting last month, when the following officers were elected: President, Dr. C. C. Walker, Lamberton; vice-president, Dr. Earl Jamieson, Walnut Grove; secretary-treasurer, Dr. W. A. Meierding, Springfield; delegate to the

State Association, Dr. J. C. Rothenberg, Springfield. The Redwood-Brown County Society takes the place of the old Brown-Redwood County Society, to which reference is made above.

The South Dakota Section of the Clinical Congress of the American College of Surgeons held its first annual meeting in Aberdeen on June 27 and 28. The attendance was good, the papers were excellent, and the public was greatly enlightened upon the public character of the work (reform,) contemplated by the College. The next annual meeting will be in Sioux Falls in 1922, and will be under the supervision of the following executive committee: Dr. G. G. Cottam, Sioux Falls, chairman; Dr. Frederick A. Spafford, Flandreau, secretary; Dr. F. Isreal Putnam, Sioux Falls, councilor.

ATTENDANTS ON SUMMER COURSE OF THE MEDICAL SCHOOL AT UNIVERSITY OF MINNESOTA

The following physicians have been in attendance upon the summer short courses for practitioneers, given by Medical School of the University of Minnesota.

Obstetrics—

Dr. W. B. Aitkens, LeSueur Center, Minn.
Dr. R. Guilmette, Minneapolis, Minn.
Dr. M. S. Hirschfield, Duluth, Minn.
Dr. W. H. Hollands, Fisher, Minn.
Dr. E. W. Johnson, Bemidji, Minn.
Dr. E. J. Pengally, Ironton, Minn.
Dr. O. S. Werner, Lindstrom, Minn.

Surgery—

Dr. D. D. Anderson, Minneapolis.
Dr. G. L. Baker, Austin, Minn.
Dr. A. E. Donker, Sykeston, N. D.
Dr. W. H. Hollands, Fisher, Minn.
Dr. L. M. Lowe, Glyndon, Minn.
Dr. E. J. Pengally, Ironton, Minn.
Dr. H. W. Quist, Minneapolis.
Dr. R. L. Schutt, Bremerton, Wash.

Medicine—

Dr. W. D. Anderson, Minneapolis.
Dr. H. P. Bennion, St. Paul.
Dr. R. M. Burns, St. Paul.
Dr. R. Guilmette, Minneapolis.
Dr. U. M. Ivers, Christine, N. D.
Dr. B. R. Karn, Ortonville, Minn.
Dr. W. A. Lee, Fergus Falls, Minn.
Dr. M. N. Leland, Minneapolis.
Dr. T. G. Patterson, Lisbon, N. D.
Dr. E. J. Pengally, Ironton, Minn.
Dr. C. McGehee, Hibbing, Minn.

Pediatrics—

Dr. W. S. Chapman, Redfield, S. D.
Dr. J. H. Dillon, Fargo, N. D.
Dr. R. C. Hartman, Janesville, Wis.
Dr. E. P. Hayes, Eau Claire, Wis.
Dr. W. H. Hollands, Fisher, Minn.
Dr. C. E. Hunt, Grand Forks, N. D.
Dr. R. Lynde, Ellendale, N. D.
Dr. T. G. Patterson, Lisbon, N. D.
Dr. E. J. Pengally, Ironton, Minn.
Dr. H. W. Reynolds, Hibbing, Minn.
Dr. V. C. Thompson, Stillwater, Minn.
Dr. L. Van Deboget, Minneapolis.

Combined—

Dr. W. H. Valentine, Tracy, Minn.

HOSPITAL FOR SALE

Attention is called to the advertisement of a fine hospital for sale which appears in our advertising columns.

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Young Woman with ten years experience desires position with a doctor in Minneapolis having a large general or surgical practice. Can do office nursing, stenography, bookkeeping and routine laboratory work. Address 154, care this office.

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Has had extended experience in large hospital and dispensary laboratories, and can give best of references, will go outside of Twin Cities. Address 152, care of this office.

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Desires position after August 1 up to Sept. 1. Does all routine laboratory work, besides spinal fluid and cutting tissue. Also a good dietician. Now engaged in a sanatorium, but prefers hospital work, Excellent references. Address 153, care of this office.

FOR SALE—SOUTH DAKOTA PRACTICE

A first class general practice in Southeastern part of state. Located in a modern, thriving community. City of 700. Practice averages $800 a month. Offer to sell complete equipment, including drugs and *x*-ray, at cash invoice of about $1,000, and rent property to doctor for a while, or sell everything, including office residence, with small payment and convenient terms. Must be married man. You don't want a better proposition. Act quickly. Address 138, care of this office.

OFFICE OR LABORATORY POSITION WANTED

By a registered nurse of large general experience and as a surgeon's assistant; also a skilled X-Ray laboratory (medical or dental) worker. A good stenographer and secretary. Will go out of city. Highest references. Address 151 care of this office.

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The present sponsors state that their preparation contains the remedies named, with only simple carminatives added. It affords both their anodyne and antispasmodic properties. Given about one week in advance of the expected menstrual flow it is said to allay or subdue the pelvic pains common in females at this period. It is also used for relief of abdominal pains of intestinal origin, as coexisting with entiritis and summer diarrhoeas; in other words, the colicy pains caused by irritation of the bowel musculature, with localized enteric spasm. May, 1921, issue, American Journal of Clinical Medicine.

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HYPERLEUKOCYTOSIS IN EXTREME SEPSIS*

By D. B. RICE, M. D.
Aberdeen Clinic
ABERDEEN, S. D.

Since the beginning of modern hematology, which dates back only fifty-two years, divers opinions regarding the birth and death of blood constituents have been expressed. An enormous accumulation of literature in this important field in medical science is so mixed with chaff of poor research and misleading terminology that its usefulness is available with great difficulty.

It is the purpose of the writer not to incorporate the theoretical or impractical in this discussion, but briefly to review the points of interest pertaining to leukocytosis and report a few cases for your consideration. The interest of the clinician, due to his experience with disease, receives daily stimulation regarding the problems of blood formation and destruction. He asks, "What is the reason for this blood picture?" or, in the presence of other suggestive symptoms, he will ask, "Why is the blood picture in this individual still undisturbed?" Were it possible to answer these questions satisfactorily and without the hypothetical solutions usually advanced, medical science would be another step in advance, and the clinician could point with added pride to the histologist, embryologist, pathologist, and physiologist, all of whom have tilled this useful field. But, as our discussion deals with leukocytes only, it may be well to ask, "Whence cometh and whither goest thou?" Here again a debate must be heard between two schools, one holding that red cells and leukocytes develop from separate series of cells; another, that they have identical parentage.

Drinker, of Harvard, in his treatise on "Pathological Physiology of Blood Cells," tends towards the latter view. The fate of the leukocyte under normal conditions is unknown. It is stated that a number wander into the lumen of the intestinal tract and the mucous membranes of the respiratory passages, and eventually disintegrate; others probably die from autolysis, which represents the final step in their disposal. So we may conclude that we yet know little of their birth, lives, relatives, or death. In normal adults leukocytes range from 6,000 to 10,000. "Leukocytosis," a term variously used, is defined by Todd as a transient increase in the number of leukocytes, due to chemotaxis and stimulation of the blood-producing structures, in contrast to the permanent increase in leukemia. There is a subdivision for each variety of leukocyte, but practically only two, namely, polymorphonuclear and lymphocytic leukocytoses which are considered under the head of leukocytosis.

In the way of review, we may briefly mention that for the first two to four days of life there is usually a polymorphonuclear leukocytosis with a count of 12,000 to 35,000. As time passes this count drops to near 11,000, and the polynuclears decrease, and an increase of lymphocytes, ranging from 40 to 60 per cent, is noted until the third year when the normal adult percent-

*Read at the fortieth annual meeting of the South Dakota State Medical Association at Aberdeen, May 25 and 26, 1921.

ages begin to be established. There has been no adequate explanation for the polymorphonuclear leukocytosis at birth. Digestion is followed by leukocytosis of both polynuclears and lymphocytes. The total count rarely goes above 15,000, and reaches the maximum from three to five hours after eating.

Digestion of proteids only causes this leukocytosis. Vigorous exercise often causes a count around 14,000. During a study of Marathon runners Emerson reported a count of 27,700. Pregnancy causes a leukocytosis of 13,000 to 16,000, the cause of which is yet questionable. There is scarcely a substance which can be injected subcutaneously without producing leukocytosis. Even normal saline solution has this effect. Proteins in general, when introduced into the blood stream, cause leukocytosis, and this opens the door to the most interesting phase in the causation of leukocytosis, as bacteria and their extracts belong to the protein group.

Just now it may be well to speak of the blood condition we know as "leukopenia or hypoleukocytosis." When typhoid fever runs a normal course there seems to be no tendency for leukocyte formation in the bone marrow. These cells that are there at the time of infection are gradually used up and there is no new formation, but let intestinal perforation, typhoid osteomyelitis, or empyema occur and we find at once a leukocytosis. The activity of the tubercle bacillus does not cause an increase in leukocytes unless meningitis occurs.

We as yet have no adequate understanding of the hypoleukocytosis in these and other diseases, and it is our intention to let alone the fields of theory and hypothesis. However, the teaching of Wells regarding a temporary leukopenia, namely, that the bacteria of these diseases together with a marked increase in the number of leukocytes may be found abundantly in the liver and spleen synchronously with the onset of leukopenia, leads one to believe that the condition is due to a positive chemotaxis, and the field of operation is within the internal organs. Aside from the aid a leukocytosis gives in diagnosis we may ask what is its prognostic value? Bearing evidence that the general understanding, namely, that a high leukocyte count is a favorable omen in inflammatory conditions, we ask your pardon in referring to some recent observations at the Lincoln Hospital in this City, where the writer and his associates have noted the leukocyte curve in extreme septic conditions, and especially those caused by the pneumococci, streptococci, and staphylococci. A high count depends, not only upon the character and amount of infection, but upon the condition of the leukocyte-producing tissue, in other words, the resistance of the patient.

A patient presenting symptoms of extreme sepsis and having a high white count offers a favorable prognosis, but, should the leukocytes take a steady downward course, the sepsis still presenting, we understand that actual leukocyte destruction is in progress, accompanied by aplasia of the bone marrow. Such a course is a grave condition, and to the grave it usually leads. Thus we draw conclusions and also quote from the literature as follows: "Infection mild: resistance good, slight leukocytosis. Infection severe: resistance good, marked leukocytosis. Infection severe: resistance poor, no leukocytosis."

The amount of exudation is not in itself an indication of leukocytosis, for erysipelas or scarlet fever may cause as high a count as the average count in pneumonia or empyema. No direct connection exists between leukocytosis and fever, many febrile affections running their course with a normal count. However, when both leukocytosis and fever are due to the same cause, they rise and fall together, but the correspondence is rarely accurate. In pneumonia the degree of leukocytosis does not run parallel to the degree of fever or the amount of lung involvement. Nevertheless, cases with extensive signs in both lungs and especially complicated by empyema or other suppuration are more apt to have a very high count provided the patient gives vigorous reaction. Acute rapidly spreading inflammation, and especially when the pus is under pressure, produces a greater leukocytosis, other things being equal, than those in which the process is relatively chronic and stationary. At this time we offer the following case histories for consideration:

Case 1.—Mr. R. F., clinical number 2217, aged 35, bricklayer, entered the Hospital July 31, 1920. Family history, good. He gave a past history of most diseases of childhood, but nothing else until five years before admittance, when he developed a small "sore" on the genitals, which the doctor treated locally and which soon healed. No internal medication was given, as the doctor informed him that it was only a "soft chancre." The patient remembers, however, that there was only one sore, and that it was firm to the touch. No history of secondary manifestations could be gotten. He was delerious when admitted and presented a very interesting color, which may be described as grayish-blue

This patient was perfectly well, working every day at his trade until ten days before admittance, when, following a few days of unusual exertion in the way of stepping off and on an inconvenient platform, he thought he had "strained" himself, which caused pain in the right groin. This region, however, began to swell and became extremely painful.

He had been given a good quantity of morphine, and there was an incision 3 cm. in length, and 1 cm. in depth, just below Poupart's ligament, which the doctor had made, but for fear of injuring the femoral vessels, he declined further operation. The swelling and edema not only involved the region of the right groin, but extended up over the right lower quadrant of the abdomen and the upper part of the thigh. Nothing else of interest in the physical examination was noted.

Following the blood count he was re-examined for any evidence of leukemia, but with a negative result. His temperature was 102.2°; pulse, 126; respiration, 26; urine, normal; blood pressure-systolic, 120; pulse-pressure, 35. It was a decided case of sepsis, but the origin of the infection could not be ascertained. A blood count was ordered, which revealed a hemoglobin (Tallquist) of 85 per cent, red cells, 4,500,000, and leukocytes, 400,000. Our laboratory technician, realizing that this count was unreasonable, made five different counts from five different drawings of blood, and even made new solutions and estimated the leukocytes from her own blood before giving a report. She was asked to do a differential which she did, counting 500 cells with the following result: polynuclear neutrophiles, 72.5 per cent; small lymphocytes, 15 per cent; large lympocytes, 6 per cent; eosinophiles, 1 per cent; basophiles, 5 per cent; neutrophilic myelocytes 0.5 per cent.

These percentages could be normal for a leukocytosis of this degree, although the 5 per cent neutrophilic myelocytes, as you know, is suggestive of leukemia, but Todd claims that the neutrophilic variety is often found in a marked leukocytosis.

Ehrlich also reports a case of necrotic tonsillitis in which the neutrophilic myelocytes constituted 20 per cent of a leukocytosis of 22,000. He also claims that any number of these cells under 10 per cent may be found in extreme degrees of leukocytosis.

The patient was operated on the following day. About 500 c. c. of pus was evacuated, which had burrowed not only down into Hunter's canal, but behind the right psoas muscle. This was a streptococcic infection. The patient left the hospital the fifteenth day, at which time his leukocyte count was 18,400. A Wassermann was taken with a positive result. He was treated for syphilis, but soon left for his home in Indiana, but to continue his treatments. Last week a differential count was made in the laboratory of Dr. Edward H. Frigge, Vincennes, Indiana, which showed a leukocyte count of 8,800 with normal percentages.

Case 2.—Miss I. R., clinical number 3188, age 17, admitted to the hospital November 19, 1920.

Family history, excellent; past history, measles and whooping cough; no other diseases until present illness; occupation, house and field work.

Nine days before admittance the patient was taken with sore throat, fever, and headache. Two days later a severe crampy pain developed in the abdomen. She became distended; had persistent vomiting and very high fever, and nothing had passed from the bowels for six days. The family physician had visited this patient twice and found a temperature of 106° to 106.2° on different days, but her temperature had fallen the day previous to admission. The patient tried to walk from the depot to the hospital, but fell upon the street. Temperature, 99.2°; pulse, 120; respiration, 46; urine showed a trace of albumin, but microscopically negative; physical examination showed a distended abdomen with some fluid and generalized tenderness.

She also presented findings of lobar pneumonia in the lower right lobe. Her chances of recovery we considered practically nil, but we decided to open the peritoneal cavity, using a local anesthetic if possible. Our diagnosis was acute general peritonitis, possibly secondary to a ruptured appendix; also lobar pneumonia, which possibly had just passed the crisis.

The operative findings were general serofibrinous peritonitis with matting of the intestines and marked fibrinous exudate, the appendix secondarily involved; tubes, normal except being caught in the general inflammatory condition. About 500 c. c. of abdominal fluid were evacuated. A smear from this fluid showed the pneumococcus. In addition to abdominal drainage a cul-de-sac drain was left.

The patient ran a temperature from 104° to 105.2° for several days; then gradually became normal. She left the hospital January 4 last. Her leucocyte count when admitted was 192,000 with a differential as follows: polynuclear neutrophiles, 82.5 per cent; small lymphocytes, 11 per cent; large lymphocytes, 6 per cent; eosinophiles, 0.5 per cent. The following day her count was 136,000. It gradually came down when on January 1, about six weeks after admittance, it was 8,800.

Quoting from the literature we mention high counts as follows: (Bunting) abscess of liver, 104,000; (Hirschfield and Nothe) primary peritonitis, 190,000; (Lehr) pneumonia, 150,000 (quoted by Hernberg); (Grawitz) inflammatory leukocytosis, 168,000 (quoted by Faught); (Felsenthal) diphtheria, 148,000 (quoted by Webster).

DISCUSSION

Dr. David A. Gregory (Sioux Falls): I have enjoyed Dr. Rice's paper very much, especially as I am interested in this line of work and also in laboratory work. His cases are unusual.

I have found these extremely high-blood counts in one case of meningitis and also in a case of pneumonia in a child. I find that these extremely high-leukocyte counts are more prevalent in children than in adults as all will discover if they are watched for.

The essayist spoke about the absence of leukocytosis in tubercular infections ordinarily. I think this absence is due to the fact that the tubercle bacillus is probably composed of fatty acids and is not richly supplied with proteins, as other bacteria are. I think Vaughan says in his book that the split protein products of bacteria hydrolyze all split protein, producing hyperleukocytosis.

The injection of colloidal material will produce primary leukopenia and secondary leukocytosis, with a corresponding temperature drop and a corresponding temperature rise. We can attribute these things to absorption of the bacterial-split protein from the absorbing surface. The absorption is more readily brought about from the peritoneum, and the doctor's cases show that most of them had occurred from peritoneal involvement. We also find a certain type of cases in which we do not have any leukocytosis whatever, and, as a rule, they are uniformly fatal.

I think the point brought out by the doctor in regard to the prognostic value of the leukocyte count and the proportion of neutrophiles is very good. A decided leukocyte count is an index to the resistance of the patient. A high leukocytosis is much more favorable from a prognostic standpoint than a leukopenia in the presence of an infection.

Dr. M. S. Henderson (Rochester, Minn.): I enjoyed the paper of Dr. Rice very much. It takes up a very important question. I shall speak of only one point in connection with my line of work in treating osteomyelitis. In acute osteomyelitis we have a high leukocyte count. We do not, however, see the exceptionally high leukocyte count he mentioned. Speaking off-hand, I cannot recall seeing a leukocyte count over 50,000. I have seen 40,000 to 50 000 quite often, but when you open and drain your osteomyelitis the leukocytosis drops also. The osteomyelitis becomes disseminated to other bones, the patient becomes more ill with high fever, and the leukocytosis will often drop. Then you have to be careful and give a guarded prognosis because the cases may go on to endocarditis. Leukopenia is dangerous. In our epidemic of influenza we had a patient with high fever and low leukocytosis. Certain types of infection will give that, and I was wondering whether the prognosis is not materially influenced in a certain type of leukocytosis.

Dr. F. E. Clough (Lead): I want to report one very interesting case that came under my observation with a high leukocyte count. It was extremely interesting.

Briefly, the patient was an unmarried woman, with a very good reputation, who was brought into the hospital with a very acute abdomen. We could not get a history out of her of any description. We were very much startled to find a leukocyte count of 375,000. She was in a most critical condition, and we found a ruptured ectopic pregnancy. We could not account for the very high leukocytosis, but later we found that, in addition to having ectopic pregnancy, she also had splenic leukemia.

Dr. H. J. G. Koobs (Mitchell): In view of the fact that the leukocyte count may be of so much importance and as it is rather easily made, I think we ought to make use of it more than perhaps it is being made use of ordinarily. I have noticed that in some hospitals the rule is, that every patient who enters the hospital is subjected to a leukocyte count and a urinary examination by the laboratory.

Dr. Carl A. Hedblom (Rochester, Minn.): I would like to call attention to a moderate degree of leukocytosis in a condition I have not seen described, and that is in the ordinary infectious types of empyema that are treated with the hyperchlorite solution. During the winter of 1918-19, we had a lot of cases that were treated with the hyperchlorite solution, and some of them would develop an increased temperature, which led us to make a leukocyte count, and we found the leukocyte count quite high. These patients went on to an uneventful recovery. Then we made a study of other cases, and we found, as a rule, in cases with large cavities that were doing well, running no temperature, and gaining in weight, there was a relative leukocytosis of anywhere from 15,000 to 25,000.

Dr. Rice (cloring): I think it was Newman who during typhoid fever injected turpentine under the skin without the production of leukocytosis. After the fever had fallen and abscess developed, he had a leukocytosis. Just why that is, we do not know. To quote a definition by Todd, "Leukocytosis is due to chemotaxis and stimulation of the blood-producing organ." Chemotaxis of itself will not produce leukocytosis. There is something that must stimulate the blood-producing organ, and, as Dr. Gregory says, I think the most plausible solution of the question is that the tubercle bacillus and typhoid bacillus do not yield the proteins that are necessary to stimulate the blood-producing organ.

THE PATHOLOGY OF ENCEPHALITIS EPIDEMICA [LETHARGICA]*

By H. E. Robertson, M. D.
Professor of Pathology, Univerity of Minnesota
MINNEAPOLIS

Grossly, the brain and other organs may show absolutely no demonstrable change. Occasionally tiny hemorrhages may be seen in the substance of the basal ganglia or medulla or, more rarely still, in the cortical portions of the cerebrum. The spinal fluid is clear, and may or may not be increased. There is rarely any opacity of the pia arachnoid, but congestion is usually quite marked. As for the remainder of the body, there are no constant lesions to be found. A terminal bronchopneumonia is occasionally present. The spleen and lymph nodes are not enlarged. Petechial hemorrhages of the pleura and epicardium have been observed. Boyd[1] has mentioned degenerative changes in the kidneys.

Histological changes are usually described as specific and are confined to the brain and upper cord. In the brain all observers are united in the observation that the chief lesion consists of perivascular collections of lym-

*Presented at Minneapolis Clinic Week at Minneapolis, April, 25-29, 1921.

phocytes, plasma, and endothelial cells in varying numbers and in a wide range of locations. In fact, the histopathology in this respect readily explains the protean character of the clinical phenomena which this disease may manifest. While these abnormal cell groups are usually more prominent in the thalamus, caudate and lenticular nuclei, red nucleus, pons, and medulla, any portion of the cortex may occasionally show the change, and often cell collections are present in the pia arachnoid. Again, any single nucleus or group of nuclei may apparently bear the brunt of the injury, and the greatest amount of variation in this respect renders impossible the formulation of any satisfactory single rule as to the location or degree of lesion. Other finer changes are also often seen. These vary from tiny hemorrhages and areas of necrosis or edema to so-called neuronophagia and satellitosis, coincident with degenerative phenomena in the ganglion cells and proliferation of the neurogliar elements[4]. Bassoe[2] has called attention to fat droplets in the neuroglia and ganglion cells of the brain as a further possible evidence of cell damage. Polymorphonuclear leucocytes are not increased and are not a part of the pathologic cell groups.

The causal agent has not been indentified. Certain experiments by Levaditi and Harvier,[4] Loewe and Strauss,[5] and Rosenow[6] indicate that the disease may be transmitted to rabbits and perhaps other animals, but the evidence is not yet sufficient to furnish ground for any positive conclusions. The time relationship to influenza has been emphasized in almost all the epidemics of this latter disease, but no other etiologic connection with influenza would seem to have been established. The question, therefore, naturally arises as to whether in the absence of gross or microscopical evidences of some other known disease, one can safely rely upon the histologic picture to make a positive diagnosis of epidemic encephalitis. (Fig. 1.)

In answering this question it becomes necessary to review the lesions described in other

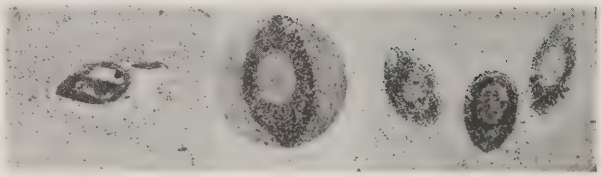


Fig. 1. Fig. 2. Fig. 3.

Fig. 1. Perivascular cellular collections in epidemic encephalitis, (Boyd.)
Fig. 2. Trypanosomiasis, (Mott.)
Fig. 3. Characteristic pervascular collections in typical case of anterior poliomyelitis.

types of encephalitis. Bassoe[2] has emphasized the fact that in human trypanosomiasis perivascular cell collections have been found (Fig. 2), which cannot be distinguished from those of epidemic encephalitis. Similar changes are mentioned by Boyd[1] and others for polio-encephalitis (Fig. 3) and in paralytic dementia and other syphilitic encephalopathies exact duplicates of this lesion are regularly found (Fig. 4). Par-

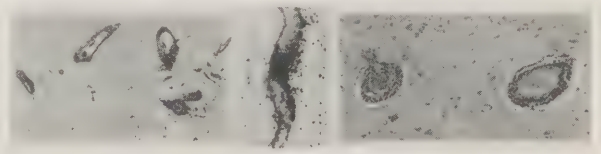


Fig. 4. Fig. 5. Fig. 6.

Fig. 4. Lesions in a case of cerebral syphilis.
Fig. 5. Lymphocytes around vessels in case of horea, (Poynton and Holmes).
Fig. 6. So-called Borna disease of horses. (Joest).

ticularly interesting are the lesions described by Poynton and Holmes[7] as occurring in the brain in chorea. (Fig. 5.) Experimental infections of rabbits by the streptococcus viridans[8] confirm the constancy of this type of reaction. Joest[9] pictures (Fig. 6) the same histopathology for the so-called "Borna disease" of horses, and the same author calls attention to similiar findings in rabies. Lastly, there has recently come under observation in the laboratories of neuropathology of this university a brain from a case in which there were a history and strong clinical evidence of lead poisoning, and in this brain are extremely widespread lesions identical with those given for the various diseases mentioned above.

Certain differential factors are still possible as aids to diagnosis:—the Wassermann reaction and other spinal fluid tests in syphilis, the parasites in trypanosomiasis, the Negri bodies in rabies, the streptococci in chorea and allied infections, the tendency to involve the anterior

horns of the spinal cord and other minor differences in poliomyelitis, the occurrence of the "Borna disease" alone in horses, and the history and clinical findings in cases of lead poisoning. In spite of these aids toward the establishment of a diagnosis we are confronted with the general fact that encephalitis from any cause may show perivascular collections of mononuclear cells, and, therefore, this lesion has no claim whatsoever to specificity. Its presence is consistent with the diagnosis of several diseases often differing as widely in their clinical signs and symptoms as they do in their etiology. In cases which present clear-cut syndromes there will be little difficulty in establishing the nature of the disease, but a host of borderline cases may require the most exacting study and justify a conservative judgment. In the meantime the need of further etiological studies on epidemic encephalitis, as well as the development of additional laboratory aids for its diagnosis, is clearly apparent.

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PRACTICAL POINTS IN THE DIFFERENTIAL DIAGNOSIS OF EXANTHEMATOUS DISEASES*

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A race free from contagious diseases will never be possible unless four fundamental principles for combating these diseases are fully recognized and practiced: (1) sanitation; (2) scientific and rigid quarantine; (3) specific preventive therapy; (4) early and accurate diagnosis.

Sanitation undoubtedly decreases the morbidity and mortality in general; however, present-day satistics reveal that it exercises but a slight influence on the prevalence of some of the contagious diseases. Quarantine in the United States is too inadequately enforced to bring about a perceptible decrease. Until we discover vaccines and antitoxins for every contagious disease, an early and accurate diagnosis is our main weapon in the fight against such disease.

The diagnosis of contagious diseases has been given insufficient and inadequate attention in the medical college curriculum. The teaching of this subject has been assigned to the younger and often less experienced clinicians, with practical demonstrations occupying but a few hours in the entire medical course. Until a few years ago many students graduated from universities without having seen a single case of small-pox.

A knowledge of the diagnosis of contagious diseases cannot be secured from lectures and text-books alone. The rather common belief that contagious diseases are primarily skin diseases belonging mainly to the realm of dermatology, is incorrect. Students must be taught the underlying principles that contagious diseases are primary infections, usually of the nasopharynx and respiratory tract, that each contagious disease represents a clinical syndrome, constant and permanent, and that the various types of enanthemata and exanthemata are only secondary manifestations. Furthermore, a knowledge of epidemiology and of the laws of immunity pertaining to each individual disease, and a careful history and a complete physical examination are all of the utmost importance in the diagnosis.

Mouth Symptoms.—The mouth symptoms in measles appearing in the prodromal period are characteristic and diagnostic of this disease. The gums, mucous membranes of the mouth, and the conjunctivæ become acutely inflamed. On the second day of this period the so-called Koplik spots, small bluish-white or yellowish-white, pinpoint in size, appear on the buccal surface, usually opposite the upper and lower second and third molars, at times, however, opposite and over the upper and lower incisors. These spots are discrete and are surrounded by a localized areola of red.

Koplik's spots must be differentiated from (1) white particles of food, which can be easily

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wiped off, and (2) by yellow sudaminal glands, which are larger in circumference than Koplik spots, and are not surrounded by an inflamed ring; and by (3) aphthous ulcerated lesions with denusions of the mucous membrane. The smallest of these ulcerations surpass in size the Koplik spots, and they are most commonly found on the tongue and contiguous tissues.

Within twenty-four to forty-eight hours the Koplik spots increase in number to so great an extent as to become confluent. Though Koplik did not describe as pathognomonic this confluent stage (known as "pin-point spots"), nevertheless they should be regarded a specific and diagnostic sign of measles.

Macules over the hard and soft palate representing the enanthem of measles also appear in the prodromal period to disappear before the eruption.

Along with the stomatitis and gingivitis a white coating, known as the "spots of Combe" covers the gums next to the upper and lower incisors.

A diagnosis of measles can and must be made in the prodromal stage before the exanthem appears.

Throat Signs.—The picture of the throat is of greater significance in scarlet fever than in any other contagious disease, except diptheria. Pinpoint spots over the palate and an angry scarlet colored pharynx often appear in the pre-eruptive stage of scarlet fever. The pseudomembrane formed in the more severe types must not be mistaken for that of diphtheria. In small-pox and chicken-pox, pustules and vesicles, respectively, are frequently seen on the tonsils.

The Tongue.—A definite pathology of the tongue is characteristic of scarlet fever. On the first day a white fur almost completely covers the tongue. On about the second day the desquamation sets in at the tip to continue down to the base of the tongue during the subsequent three days. The papillæ are distinguishable over and through the white coating during the entire process of desquamation, giving the appearance of white strawberries. On or about the fifth day the red strawberry clean tongue with the enlarged papillæ, manifests itself. The enlarged papillæ at the tip and edges of the tongue are most constant. It then becomes smooth, dry, and glazed, assuming a port-wine hue. This condition of the tongue in scarlet fever probably represents the most important sign and symptom in the differential diagnosis, especially after the disappearance of the rash and before desquamation has begun.

The Glands.—The glands are frequently enlarged in practically all contagious diseases; this is especially true of measles, German measles, and scarlet fever. The cervical glands, both the anterior and the posterior, are usually involved, the submaxillary and the epitrochlears only at times. The posterior cervical glands are more frequently enlarged in German measles than in measles. The enlargement of the posterior occipital and auricular glands is quite characteristic in German measles.

The Pulse.—The pulse-rate, although in adults of considerable value in the diagnosis of scarlet fever, cannot be relied upon in children because of the influence of psychic factors.

Fever.—Increased temperature is one of the earliest and most constant symptoms. It is especially of value in the differentiation of contagious diseases from drug eruptions. A diagnosis of measles, diptheria, or scarlet fever is uncalled for in the absence of fever. In varioloid and varicella, however, the temperature may be normal.

Rash.—A positive diagnosis of measles, German measles, and scarlatina in the first forty-eight hours, should be made only in the presence of an eruption. The duration of the rash is at least twenty-four hours. A rash lasting but a few hours makes doubtful the diagnosis of one of the above diseases. This applies also to German measles. In measles the exanthemata persist for three days or more.

Laboratory Diagnosis.—The blood-picture exhibits a leucopenia in measles from the onset of the disease until the disappearance of the eruption. In the incubation period, there is a slight leucocytosis. The normal count is resumed at about the fifth day of the eruption. In scarlet fever the leucocytosis persists for about a week and then falls gradually to normal by the end of the third week. During this peirod the polynuclear leucocytes are increased. Leucopenia may be but slight, if at all, in German measles. Leucocytosis is present in scarlet fever, chicken-pox, small-pox, and whooping cough, being associated in the latter disease with a relatively high lymphocytosis. Of course complications alter the normal blood-picture. In small-pox, a skin lesion examined under the microscope displays the rather characteristic inclusion bodies with large polynuclear cells. For a confirmatory diagnosis the contents may be injected into the cornea of a rabibt. Typical small-pox lesions will appear thirty-six hours after scarification. In chicken-pox lesions are seen the large epithelial giant cells, which are absent in variola.

Chicken Pox.—In earlier times adults were thought to have a natural immunity to this disease. This opinion cannot be held now-a-days, even though chicken-pox is by far more frequent in childhood than in later life. The incubation

period varies from two to three weeks. In children the prodromal period lasts only two days, and it is not possible to recognize the disease at this stage. In adults the pre-eruptive period extends over a longer interval. Associated signs of the illness are slight fever, headache, and malaise. The eruption is the decisive factor for the differential diagnosis, which fact makes the diagnosis comparatively difficult in colored people, since the color of their skin obscures the color of the lesions and of the surrounding area of inflamation. The lesions are usually most diffuse upon the trunk, especially upon the chest and back. They are found less numerous on the extremities, and only infrequently on the palms and soles. One and the same area may exhibit lesions at different stages of development, the simultaneous presence of a macule, a vesicle, and a scab obtaining. Maturation is completed in from a few hours to one or two days, to be followed by quick rupture and rapid dessication. In chicken-pox with deep seated lesions scattered over the entire body the differential diagnosis from small-pox is rendered difficult.

Varicella has to be differentiated from small-pox, vaccinia, drug eruptions (for example, eruptions caused by iodides), acne, impetigo, pemphigo, pemphigus, herpes, eczema, scabies, and vesicular urticaria. The enanthem on the tongue or palate may simulate aphthous stomatitis. A vesicular eruption in the former and isolated ulcerations in the latter differentiate the two diseases.

Small-Pox.—It must be borne in mind that small-pox in this day is most frequently a typical, exhibiting only the signs and symptoms of the so-called mild or varioloid type, with a shortened or absent prodromal period. In recent years many cases with only a few lesions, or none at all, have been reported. The eruption may be vesicular; the pustules, if present, may simulate those of chicken-pox; they may be small, superficial, and without umbilication. The distribution of the eruption and the rate of development, rather than its character, are most important in the differentiation from all other contagious diseases. The distribution is centrifugal, with the lesions grouped more closely on the face than elsewhere. The hands and feet are always affected; the palms and soles usually. About two days elapse between the appearance of the lesions on the face and thoes on the hands and feet. On the same area the lesions are all of the same stage of development. This is definitely characteristic and diagnostic of small-pox. Not until maturity is reached do they rupture, except in artificial trauma. This applies to mild and severe cases alike. They are multilocular, not translucent, and do not collapse upon a single pin-prick.

The symptoms of the pre-eruptive stage are common to all acute febrile diseases, especially influenza and measles. It is of importance to remember that in small-pox this period is very constant, rarely exceeding four days. A morbilliform eruption, lasting only about twenty-four hours, frequently appears in this stage. This should not be mistaken for measles. However, the exanthem of measles is finer and more abundant than that of variola. In the former they remain macules, while those of small-pox become papules and pustules. Koplik's spots are conclusive. The lumbar pain, somewhat characteristic for small-pox, is also present in influenza. However, in influenza there are a leucopenia, a marked depression, more severe muscular pain and tenderness, and usually a continuous irritating cough.

In the macular stage the disease is rarely recognized as small-pox. Small-pox in this stage is differentiated from measles by the absence of mouth symptoms, in particular the Koplik spots. The macules bear a strong resemblance to the rose spots in typhoid fever, in which disease, however ,the spots come forth at about the beginning of the second week; nor is the face ever affected. Erythema multiforme has also to be considered. The difference in the distribution and the size and character of the lesions most commonly found on the extremities differentiate erythema multiforms from small-pox.

Finally, mention should be made of typhus fever and purpura hemorrhogica, which also bear resemblance to the macular stage of hemorrhagic small-pox.

The rash in typhus fever is erythematous during the first three or four days, later becoming purpuric. It involves mainly the trunk and the extremities, less frequently the palms and soles and never the face. After absorption of the hemorrhage the lesions become pigmented. A successful small-pox vaccination renders a diagnosis of small-pox extremely doubtful. Cases of acute eczema, vesicular and pustular dermatitis, impetigo, pemphigus, infected scabies, dermatitis herpetiformis, and drug eruptions (caused by iodides and bromides) may simulate variola.

Scarlet Fever.—Children under one year of age rarely contract scarlet fever. Of about 1,100 cases studied by von Pirquet only two were under one year of age, none were under four months.

Scarlet fever has lost its typical picture of previous years, the severity of the throat infection and the intensity of the eruption rarely running parallel. In many cases the angina is mild and the rash prominent; again, the rash may be very slight and the angina most marked. Because of the congestion and swelling the rash on the face

may be similar to that in measles. The rash on the arms, especially the extensor surfaces, is frequently macular or papular. This may cause confusion. However, the rash on the trunk is most constantly scarlatiniform. The color of the exanthema depends on its intensity and on the hue of the patient's skin. The latter factor makes a diagnosis comparatively difficult in negroes. The eruption is never urticarial, never circinate. It never disappears within twenty-four hours. A but slightly infected throat is inconsisten with a morbund patient. A scarlatiniform erythema may occur in the following conditions:

Typhoid fever, influenza, sepsis, and after the ingestion of certain foods, especially lobsters and strawberries. Certain drugs, such as atropine, quinine, the salicytates, etc., produce a similar rash.

In nurslings an enema not infrequently causes an erythema, persisting for but a few hours. The mere presence of high fever may bring about a reddening of the skin in some children. The eruptions of febrile conditions, however, are without macular configuration. A hyperemia may result from crying, but subsides when the child becomes quiet. Some cases of acute tonsillitis are accompanied by an arythema. A rash may result from the injection of sera and through irritation of the skin by moist or oily compresses. Heat rashes sometimes closely resemble scarlet fever.

In diagnosis desquamation ranks equal in importance with the throat signs and the rash. Some believe that every scarlet rash is followed by peeling. They admit, however, that desquamation may be so slight as to escape notice. The desquamation in scarlatina is of the pin-hole and glove type. Similar forms may also occur after any erythema or dermatitis. The profuse desquamation at times following measles, German measles, and septic rashes, is, however, rarely pin-hole in character.

Measles.—Measles rarely occur during the first years of life, never before the first six months. The diagnosis of measles can be made because of the constancy and uniformity of the catarrhal signs in the prodromal period, and must be made at this time for the sake of early isolation. Rashes resembling that in measles may occur in exudative diathesis after the administration of some kinds of drugs, especially copaiba and bromides. Protracted heat rashes, as well as rashes caused by sepsis, a failing heart and venous congestion, may confuse the diagnosis.

The most valuable sign, as mentioned above, in the diagnosis of measles is Koplik's spots, and the most frequent causes of failure to find them is not their absence, but a lack, of knowledge of their appearance, the use of poor or artificial light, and a too hurried examination. If one is sure of their presence, even in the absence of all other signs of measles, a positive diagnosis is justifiable. For example, a patient with Koplik spots and signs of laryngeal obstruction suggestive of laryngeal diptheria or edema of the larynx is suffering from measles unless concomitant with another disease. Scarlet fever must be distinguished from measles by the sudden onset with vomiting, the characteristic rash, the angina, and the absence of Koplik's spots. In the eruptive stage rubella may closely resemble the other. The differentiation will be discussed in the following paragraph. Typhus fever may also have catarrhal signs, and the early eruption is macular. This disease, however, is more intense, and meningeal signs are much more common. The eruption becomes hemorrhagic in three or four days and becomes blotchy in character. In the state of Minnesota it is practically unheard of.

The prodromal signs of measles are quite similar to those of influenza, and during the war many soldiers were admitted into the influenza wards with measles. The catarrhal symptoms may be exactly alike. The diagnosis must be made upon the presence or absence of Koplik's spots. In adults the secondary rashes of syphilis simulate measles. The history of infection, the longer duration of the rash, and the absence of mouth signs are diagnostic of lues. Serum rashes resemble measles only rarely. Antipyrine and quinine, more frequently than any other drugs, are liable to be confused with this disease. As a rule the eruption is more blotchy and urticarial. The absence of catarrhal signs, the history of having taken the drug, the absence of fever, and especially of Koplik's spots make the diagnosis plain.

The rashes from copaiba, cubeb, turpentine, chloral, and other balsams also need to be differentiated from measles.

German Measles.—This disease is the most variable in its symtomatology of all exanthematous diseases. Sometimes it resembles a mild scarlet fever; most often it simulates mild measles. In private practice, it is rarely recognized in the sporadic form. In the Army cantonments the author's experience revealed to him the ignorance of physicians in regard to this disease. In one army camp there were about 200 case of German measles, all of which were diagnosed and treated as measles in a measles ward. About 85 per cent of the cases of German measles seen amongst the soldiers were morbilliform, and only about 15 per cent were scarlatiniform. In some of the cases part of the body was covered with one form of rash and another part with another.

The rash fades quicker than that of any other exthanthematous disease, the rash of the chest, for example, disappearing while that upon the extremities is becoming manifest. The enanthem, which Forcheimer first described, is quite constant. It is a macular rose-red eruption upon the velum of the palate and less frequently upon the uvula. It disappears upon the second day of the disease. A most characteristic and constant feature of this disease is the enlargement of the post-auricular and posterior cervical glands. Rubella can always be excluded if the breathing is hurried, and if there is any respiratory involvement. Koplik's spots are, of course, absent. On the first day the differentiation from scarlet fever is easy, but upon the second or third day the rash is of little help. During this stage the absence of angina and the characteristic tongue aid in the diagnosis.

Dukes' or Fourth Disease.—Filatow, in 1885 established a group of symptoms which fitted neither into the picture of rubella nor scarlatina. He named the disease "Fourth disease." Dukes, ignorant of Filatow's work, gave, in 1900, a description of this same disease. This account is far from being clear. According to Dukes this disease is characterized by a very bright red punctuate erythema, by a very slight angina, and a very mild clinical course.

Erythema infectiosum was first seen by Tschamer, in 1886, and by Escherich, in 1897. Very few authentinc cases have been reported in the United States. A maculopapular rose-red rash, lasting from seven to ten days is the only symptom of the disease. It appears at first on the face, causing a swelling and abnormal redness of the cheeks. After two days the limbs become involved, the rash assuming the form of large, round erythematous patches. It rarely spreads over the trunk. There are practically no subjective signs, although there may be a slightly sore throat and the tongue may be somewhat coated.

In conclusion, I should like to re-emphasize the importance of early diagnosis in the prodromal stage wherever possible, and of relying not only upon the skin manifestations but also upon a most complete history and upon all the associated signs and symptoms described above.

NEWER LABORATORY METHODS ALPLIED TO SURGERY*

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Surgery of today has invaded every domain of the human body. It has advanced with fearlessness, not even stopping at the most vital centers, such as the heart, lungs, and brain at its most important points. It has migrated from the large medical centers, and is now practiced, more or less successfully, in every small city in the United States, if not in the world. This marvelous progress we owe to the teachings of our surgical masters, the great improvement in our medical colleges, the remarkable increase in the number of hospitals, and, finally, the inspection and standardization of these hospitals by the American College of Surgeons, the American Medical Association, and the Catholic Hospital Association of North America.

As each day goes by we have found that more surgical operations are being performed, and it would seem at first thought that surgery had reached its zenith. Upon more careful examination we are of the opinion that the surgery of the future, if it would progress as it has in the past, must be upon the lines of finer diagnoses and better selection of cases. We believe that a large percentage of the mortality resulting from surgical procedures is the result of a lack of real scientific study, either by the surgeon himself or by the hospital, combined with the greed for patients which modern competition has developed.

We feel that the future advances in surgery, if we would keep it upon that high plane which our great leaders would have us do, must develop by the better selecting of surgical cases, the taking of more time in their accurate study, and being able to promise improvement in the condition of each individual patient. This presupposes a perfectly equipped hospital with aseptic technic and competent surgeons. This ideal can never be reached as long as there exist so-called surgeons who lack in knowledge, training, or facilities to enable them to keep abreast of the modern advances of medical science which their colleagues in experimental physiology and pathology and the internists have discovered. It likewise can never be reached until the time comes when general practitioners as a whole have risen above that point where honesty is not supreme, and where they only look for surgical work to be per-

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formed by those who openly or secretly divide fees regardless of their ability or the best interest of their patients.

As the short time allotted to this paper will allow me to mention only one aspect of this complicated problem I have decided to state, briefly, "Some of the Newer Laboratory Methods Applied to Surgery," which, if properly applied and their interpretation viewed with an open mind, together with the clinical picture presented, will aid us materially in arriving at a correct diagnosis and a mature surgical judgment, so that we may thereby render better service to our patients, lessen the surgical mortality, and raise the standard and esteem of surgery in our respective localities.

I shall not dwell upon the technical description of laboratory methods because this paper is intended only to review this subject from the broader viewpoint of doing better surgery. The old idea of making a physical examination, together with a blood-count and a superficial urinalysis, is no longer tenable if we would raise the standard of our surgical work. We must use every known means to gain a broad and unbiased view of our patient's physical condition. After determining that the case is a surgical one we must decide whether or not the patient is in proper condition to withstand the operation. If not, preliminary treatment must be given beforehand. We must decide what anesthetic will be the most suitable and, finally, we must have all the preliminary work done so that if complications arise, they may be treated in the best possible way without loss of time.

Upon entering the hospital every surgical patient, with the exception of emergency cases, should have a Wassermann made and his blood-group determined. A positive Wassermann might change our opinion. Blood-grouping is essential because, during or after operation, our patient may need a transfusion or a subsequent skin-grafting. The laboratory has taught us that it is a most serious thing to transfuse without preliminary blood-grouping. Or, again, in a considerable number of cases a preliminary transfusion will change a poor operative risk to a safe one. In cases demanding secondary skin-grafting where there is some contra-indication to the use of autogenous grafts we know that taking skin from another person who belongs to the same group will give the best results.

Acidosis has been the cause of many fatalities following both minor and major surgical procedures. For many years it was supposed that these patients died from sepsis, but later knowledge has confirmed the fact that acidosis was the cause of the fatal termination. Acidosis can now be definitely diagnosed and its severity determined in a very convenient manner by measuring the carbon dioxide combining power of the blood plasma by use of the Van Slyke apparatus. Not only is the mortality from surgery in diabetes very high because of the acidosis present, but also in many septic conditions we have learned there is an acidosis with considerable danger. Again, we know that ether as an anesthetic produces acidosis and this extra lowering of the blood alkalinity may be just enough to cause a fatality in a patient who has an acidosis; therefore it becomes essential in all diabetic and septic conditions to detect and determine the degree of acidosis present. Further, we must remember that glycosuria is of very little value in diagosing diabetes, for often in chronic cases there may be no glycosuria for long periods of time, while in the so-called "renal diabetes" there is glycosuria without true diabetes. Hence we see that our only true guide is the estimation of the blood sugar. Foster, in writing in the *Annals of Surgery,* has come to the conclusion that a patient cannot be expected to survive any operative procedure where the blood sugar is over 0.35 per cent or where the carbon dioxide combining power is less than 40 per cent. Therefore all cases showing acidosis or hyperglycemia must have preliminary medical treatment before operation.

In all surgical conditions it is necessary that the cardiovascular system should be properly investigated. This will often lead us into deeper study of the patient's physical condition, guide us in the choice of the anesthetic, and may prevent a surgical calamity or a fatal termination. We have had the experience of seeing two patients suffer a stroke of apoplexy while on the operating table under anesthesia.

In all major genito-urinary surgery or in all those cases with high blood-pressure or signs pointing to renal disease we must gain an accurate estimation of the functionating power of the kidneys, for many of the cases with marked renal impairment, which would cause surgical deaths, show practically nothing upon urinalysis save possibly a cast or two with a few leukocytes. It becomes not only necessary to estimate the excretory capacity of the kidneys, but even more essential still to estimate the amount of the re-

tention products in the blood. It is by this means that we can gain a knowledge as to whether or not the patient is able to withstand the proposed operation. Likewise we may gain a true and accurate estimation of the results of preliminary treatment. How many deaths have we seen following prostatectomies where the laboratory had not been used to determine the exact condition of the patient? This class of patients also necessitates the use of the *x*-ray combined with cystoscopy and ureteral catheterization.

Of the many laboratory methods for estimating the excretory power of the kidneys probably the simplest and best is by means of phenolsulphonaphthalein. By injecting intravenously or deep in the muscles of the back 6 mgm. of this drug we are able in two hours to obtain a very accurate idea of the excretory power of the kidneys. With this test and ureteral catheterization we are able to estimate the exact excretory power of each kidney separately, and thus are able to judge whether or not it would be safe to remove a diseased kidney. It must be remembered, however, that this test only gives us information as to what the kidneys are doing at that particular time. It does not tell us anything about the amount of waste metabolic substances dammed back and circulating in the blood-stream. Normally phenolsulphonaphthalein should be excreted from healthy kidneys in the amount of 60 to 75 per cent in two hours. Should the excretion exceed 75 per cent we must look with suspicion, as this usually means diseased kidneys, and the increased excretion is simply an evidence of the fact that the drug has acted as an irritant to the diseased renal epithelium and hence the increased output. Thus we see that the estimation of the excretory power of the kidneys has been brought to a point where the surgeon can take advantage of it, for either a low or an extra high excretion warns him as to possible future danger should he attempt operative measures at once.

Great significance must be attached in these surgical cases to the estimation of retained metabolic products in the blood. The most important of these are urea and creatinin. Their quantitative analysis in the blood has been greatly facilitated by the introduction of the colorimeter. Creatinin does not appear in quantities above its normal limits, which vary from 1 to 2 mgm. per 100 c.c. of blood, until there is considerable urea retention. Its significance, however, is very important. The reason for this and why its retention is of such prognostic value is that it is one of the most easily excreted of all the waste products and, therefore, when the kidney fails to excrete this, it denotes severe renal pathology.

One of the latest laboratory tests which is of untold value to the surgeon is the estimation of the basal metabolic rate. By this we mean an estimation of the amount of oxidation necessary to carry on the vital functions, as circulation, respiration, and secretion, when the body is in a fasting state and at perfect rest. This has of late been so simplified by the indirect calorimetric method that it is now of great practical value. The normal basal metabolic rate has been found to be very constant in healthy individuals regardless of size or weight. This basal rate is controlled by the endocrine glands, but more especially by one of them, namely, the thyroid, by means of its secretion of thyroxin. It is because of the fact that the thyroid is the chief regulator of metabolism that we are now able by laboratory methods to measure exactly the amount of work that this gland is doing; or, in other words, we are able to gain an idea as to the amount of thyroxin that this gland is pouring out into the circulation. The estimation of the basal metabolic rate should be determined in all cases of goiter, especially if there is associated any disturbance of the general health. Likewise it should be used in all cases, whether or not there is a goiter, when there are symptoms present resembling those of thyrotoxicosis. We constantly see patients who complain of symptoms suggesting chronic infection, gastro-intestinal disturbance, nervousness, or loss of weight, who have passed through the hands of several physicians without relief. Many of these patients show no enlargement of the thyroid gland or no exophthalmos. Some of them who had a slight elevation of temperature were considered to be tuberculous. At last when some of these patients had their basal metabolic rate taken the true nature of their illness was discovered, and proper treatment was finally instituted. These patients were changed from chronic invalids into useful human beings, and the laboratory can be justly proud of its new achievement.

Aside from this diagnostic aspect of the basal metabolism it has become the only true guide to the surgeon in directing him in his treatment. It tells the degree of thyrotoxicosis. When the basal metabolic rate ranges from 80 to 100 per cent or more above normal we know that the patient will not stand any kind of operative interference, and it is these cases that must receive

rest combined with *x*-ray and radium therapy. When the metabolic rate ranges between 50 and 80 per cent above normal we must use surgery with caution by ligating one superior thyroid artery, later another, and finally proceed with thyroidectomy when the laboratory shows that the metabolic rate is down.

In conclusion, then, from the few points which lightly touched upon in this paper I believe that we are justified in stating that, in the future, surgery will be done with more careful study beforehand, and it will owe many of its improvements to the newer laboratory methods. These will be used both by internists and surgeons alike, and both of them should thank the scientific investigators who have worked out modern methods and put these methods on a basis that they can be used for the benefit of mankind in general.

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DISCUSSION

Dr. John M. Dodd (Ashland, Wis.): The laboratory is an essential part of the equipment of every hospital, and especially of every surgeon. I do not think any one would attempt to do surgery today without having a laboratory and a competent technician at hand to carry out the various tests that are necessary in order to determine the physical capacity of the patient. This does not apply to surgical practice entirely, but applies to medical practice, as well.

Dr. Mason's paper shows a great deal of thought, sound reasoning, and judgment in the conclusions arrived at. I am sure that laboratory methods are going to improve and become more and more an essential factor in the good work which we aim to do—the best work that is possible.

Dr. John M. Dodson (Chicago, Ill.): Really, I think this paper, by a surgeon and from a surgical point of view, is one of the most hopeful signs I have witnessed for a long time. The lack of interest of the average surgeon in anything but the particular operation he is going to do has been simply appalling, and that among the very best men. In one of the large hospitals, presumably one of the best modern hospitals that I know, an internist returning from the service where he had been a commanding officer in a hospital and had become interested in the administrative side of hospital work, took occasion to examine several hundred histories taken at random from the files. He found scores of histories of surgical patients in the care of the leading surgeons of that hospital in Chicago in which there was not a scrap of family or personal history recorded. In the nose and throat department the proportion was even larger where there were no records of any sort. The operation was set down, and sometimes something of the subsequent record, but no adequate record of the previous history.

Last winter, as a member of the committee on postgraduate instruction of the Council on Medical Education of the American Medical Association, I visited some of the postgraduate schools that offer courses to practitioners. One which confined its work to disease of the ear, nose, and throat was visited, where they make a specialist of you in four to six weeks. Classes of about fifteen people were listening with much interest to a discussion of how to yank out a tonsil. We were very much interested in looking over the hospital attached, and kept inquiring for the laboratory. The director of the institution put us off, but finally we were insistent about it and were shown into a small room hardly as large as a good bath-room, with a microscope which obviously had not been used for a long time. A few reagents were there, but there was absolutely no indication of work. The director said, "This is where we do our laboratory work." "Do you teach pathology to your students?" "Oh, no!" "Don't you use the microscope?" "No, they do not want that." Now, schools of that type have been in existence for years, and, practically without exception, the so-called postgraduate schools of this country have lived on men who went to the city to become specialists in six weeks. They are not interested in pathology, do not care to know whether the removal of a particular tonsil is necessary. They would not dare to operate and remove an appendix, but the tonsil is easy to get at, and it is not so very difficult to persuade a patient that his tonsils ought to be removed. And that is what we are breeding in this country—men scattered all over who take out tonsils for a fee, but who do not know whether they need to be removed, and they do not want to know, they are not interested in that phase of the question. And now we hear from the surgeon from the surgical point of view; and he realizes, as others do, that this matter of thoroughness in examination is of extreme value. One thing we are just beginning to realize is the value

of thoroughness—the exhaustive, complete examination of a patient, no matter what seems to be the matter, before a decision is arrived at as to what should be done. This is a very encouraging sign.

I am going to speak of one thing, and that is the matter of history-writing, and make a suggestion as to a means of history-writing in the smaller hospitals. We face an interesting, and, in some ways, a very unfortunate situation in the hospitals of this country in reference to internes. Many of the hospitals of pretty good size are not going to have internes from this time on. Already the demand for internes is twice as great as the total number of graduates put out by the medical colleges each year. If all the hospitals which could use internes had them, and the hospitals which have them had as many internes as they ought to have to do good work, each interne having only a reasonable amount of work to do, there would be at least four times as many internes called for as are available. This shows that in the small hospitals we shall have to get along without internes.

Who, then, will write histories? They are not going to be written by the attending man if he has to sit down and write them out himself in long-hand. Last summer I happened to run across a recording appliance in South Dakota. I first learned of it through Dr. Metz, Professor of Chemistry in Tulane, who, while in Chicago a number of years ago, told me of the marvellous record it made, and I think this appliance offers a possible solution of our difficulty. It is called a telegraphone. It is practically a phonograph, and the record is made by means of a wire about the size of piano-wire, the invention of a Dane by the name of Paulsen. The record is made through some magnetic change in the wire, and we can wipe out the record by simply running a magnet over or a current through it, so the same wire can be used a thousand times or more. It can be used in connection with the telephone. I was in the central office of an insurance company when I chanced to see one of these instruments. There was a telephone at the desk of each officer, and all he had to do was to pick up the phone and, if the machine was not busy, go on with the dictation of his letters. After a while a stenographer would come along, unreel the wire, adjust the receiver to her ears and write the letters.

I believe an instrument of that kind could be installed in a hospital. In the base-board or on the wall of each private room or ward, or perhaps in the corridor, there should be connections to which the speaking apparatus could be plugged in to connect with the phonograph-telephone in the central office. By means of a mouthpiece, like that used by telephone girls at the switchboard, the examiner could talk his findings into the instrument while examining the patient. This would simplify the history-writing so that it would be done. There are now very few hospitals where the history is at all adequate. All the physician or surgeon would have to do would be to think out loud when examining his patient, the record being made in the central office; and a stenographer can transcribe this and send it to the room or ward. I do not know whether the plan is feasible or not, but it looks like a practical scheme. The manufacturer of the instrument is the Telegraphone Sales Company, 179 Dwight street, Springfield, Mass.

Dr. Dodd: Has this instrument any great advantage over the dictaphone? The dictaphone takes the dictation and records it. The up-to-date machine can be run, stopped, and started as desired, taking the dictation just as it is given, and then the cylinder is put on another machine and the stenographer transcribes it. It seems to me this has much the same principle. I am using the dictaphone in taking clinical histories. It works well, and I feel free to recommend it to any one who wants to make a record in that way.

Dr. Dodson: It occurs to me it has these advantages:

First, if we use the dictaphone we must have one in every ward or room or take it around with us. Under the plan I have outlined all we have to do is to pick up the receiver, and the records are all made in the central office.

Second, the records are much more nearly perfect.

Third, we do not need to shave off the cylinder. The wire can be used over and over again. In some hospitals it is quite a common custom now for the physician to take a stenographer around with him and dictate in the clinic-room. That is quite expensive, and it means a highly trained stenographer with medical knowledge for each clinic-room.

Dr. Mason (closing): At the Marshfield Clinic we started out with one laboratory and one technician, and we found this service so valuable in our work that now we have three laboratories and three highly trained technicians.

A GOOD WASSERMANN*

By George Manghill Olson, M. D.
MINNEAPOLIS

The making of a good Wassermann requires considerable skill, care and experience. Any particular step or process in the Wassermann test is not especially difficult, but in the assembling of the numerous factors in the Wassermann reaction, a slight error in any step leads to false results.

The Wassermann reaction does not lend itself well to supervision, and to date it has defied all efforts at standardization,—the modern sovereign remedy for all ills. Whether, therefore, one gets a good Wassermann or a poor Wassermann depends very largely on the man who actually makes the test.

The proportion of incorrect Wassermanns in many of the laboratories is unduly high, the estimates running from 10 per cent up. The latter reports, of course, are useless, or worse than

*Presented at Minneapolis Clinic Week at Minneapolis, April 25-29, 1921.

useless. At the present time there are a large number of persons being treated for syphilis who never were infected. The diagnoses in these hundreds of persons were made largely on incorrect Wassermanns.

Generally speaking, the fault in the case of incorrect Wassermanns lies with the laboratory.

Excluding, then, these large numbers of poor Wassermanns, we find that the Wassermann reaction is of fundamental importance in the diagnosis and treatment of syphilis. Certainly it is the most valuable laboratory test in dermatology and syphilology.

Practically the four plus positive Wassermann reaction always means syphilis. Two plus positive Wassermanns, if present on repeated examinations, often are of great aid in the diagnosis of rather unusual lesions. The negative Wassermann reaction practically is present in all patients who are not suffering from syphilis. The Wassermann reaction is also negative in perhaps 33 per cent of all cases of late syphilis, even though the patient has received no treatment and may show obvious lesions of syphilis. About 50 per cent of the patients with primary syphilis or chancre, as they come to us, show a positive Wassermann reaction. The Wassermann is often markedly influenced by treatment, even small doses of mercury being at times sufficient to change a positive to a negative. We may, however, encounter Wassermann-fast patients, in whom the Wassermann remains positive in spite of intensive and long-continued treatment. If, as seems probable, the Wassermann reaction is an indication of living spirochetes in considerable numbers in the tissues of the body, the prognosis in these Wassermann-fast patients is rather poor. Some of them have general paresis or other severe resisting forms of syphilis.

SUMMARY

1. There are many poor or incorrect Wassermanns made at the present time.

2. The fault and the responsibility for these incorrect Wassermann reports lie very largely with the laboratory.

3. The only remedy that I can see for the cure of this condition is time. Gradually the technic in the laboratories will improve.

4. The Wassermann reaction properly made is of fundamental importance in the diagnosis and treatment of syphilis.

5. Unavoidable errors in the making of Wassermanns should not exceed one-tenth to two-tenths of one per cent.

6. At the present time we should use extreme care in making a diagnosis of syphilis on the presence of a positive Wassermann in the absence of other signs or a history of syphilis. It is possible to obtain two or more incorrect positive Wassermann reports on the same patient.

7. Patients with no obvious signs or a history of syphilis, but in whom there is a report of a positive Wasserman, should be carefully examined for signs of syphilis, or referred to a syphilologist, before beginning treatment.

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SEIGE OF THE TOBACCO BASTILE.

Since the wave of prohibition has been so seemingly successful, many of the antis have begun their war upon men and women who use tobacco. So far their arguments have been rather personal, not at all general, and they have had influence enough in the Utah legislature to have a law passed prohibiting the use of tobacco. The first offense carries with it a fine; the second offense is accompanied by more severe punishment. Of course every effort has been made to interest Congress in passing prohibitive laws against tobacco. Very naturally short-haired women and long-haired men have started a vigorous campaign.

Then, too, one sees in the daily press an occasional discussion as to the necessity of such prohibition, and it has been argued that men who use tobacco are very often in better health than those who do not. This, of course, is subject to a great deal of variation, because it is quite clear in the minds of the medical men there is a certain class or type of people who live to a good old age whether they use tobacco or not. It is their nature to live, and they seem able to acquire all sorts of bad habits and small vices without, in any way, impairing their constitutions.

The principal claim which is made, however, in favor of tobacco is, that it prevents bacteria from infecting the system through the mouth and throat. This, of course, is an open problem which can be disputed with safety by anyone. It is quite evident that those who use tobacco almost uniformly have bad teeth, and, at the same time, may have diseased tonsils, and Nature only waits for the time when the man is "off guard" for the infective areas to light up and infect the system, whether or no,—that is, regardless of the man's habits or of his constitution. To prove the claim that tobacco prevents this form of infection is probably impossible.

The principal argument that can be brought against the use of tobacco is, that it is an unclean habit and that perhaps every one would be better off without it. But this is invading the privileges of the minority and doubtless would fail in its efforts just as the use of alcohol has failed to disappear. Alcohol has been prohibited; it is consumed just the same, and perhaps, in some regions, more than before the wave of prohibition was started. It would be, therefore, almost impossible to prevent the use of tobacco, except in very small communities or in large cities by exclusion where the laws are frequently violated.

Why is it necessary to inflict on the Government the elaborate machinery to prevent a small vice? Why not let it work itself out? In the present age perhaps there are many men and women, boys as well as young girls, who have taken up cigarettes as a pastime or to show their independence or perhaps to demonstrate that they are free agents and can do as they please. Why should we worry about these minor affairs? The possibilities are that something will be found to take the place to tobacco, and doubtless it will be a worse form of dissipation than tobacco itself.

It is quite evident that many pepole who use tobacco do not consider the mental attitude of their neighbors; it is often really disgusting and leads one to feel that rapid extermination of unmannerly persons would be just punishment for the privilege of smoking in certain places, such as trains, business meetings, dining-rooms, etc., and would certainly be a justifiable act.

One would think that the doctors would consider this topic more scientifically from a health point of view, and yet the doctors are amongst the worst offenders. They hold medical society meetings in stuffy places, in closed rooms where ventilation is desirable, but not very easy to obtain, and, during the entire meeting, the room is loaded with the smoke of good, poor and foul tobacco; and yet these men of science, who are

supposed to look after the welfare of the community, violate one of its important safeguarding measures, by the great pollution of air for themselves and others; and while they are listening to discussions, papers, or business propositions, their brains, must be more or less befogged. It would be a wonderful opportunity for medical men to demonstrate a health measure in a public meeting place. Let them secure good light, good ventilation, and prohibit the smoking of tobacco while the meeting is in session. Can you see them do it?

THE WORK OF THE ROCKEFELLER FOUNDATION IN BEHALF OF MEDICAL WORK AND EDUCATION

It is exceedingly interesting to read what the Rockefeller Foundation did for medical work and education in 1920, which, of course, is a small part of the whole effort and expenditure in this line, all of which makes for the advancement of medicine.

The following is a summary of the work of the Foundation in these lines, and it reads like romance. We present it because of its great value to thoughtful medical men.

Aided six medical schools in Canada.

Gave a large sum to a medical traing center in London.

Appropriated a million francs for the Queen Elizabeth Foundation for Medical Research in Belgium.

Agreed to contribute toward the complete rebuilding of the medical school of the University of Brussels.

Provided American medical journals and laboratory supplies for ten medical schools and medical libraries in five European countries.

Continued to construct and maintain in Peking, China, a modern medical school with a pre-medical department.

Aided thirty-one hospitals in China to increase their efficiency in the care of patients and in the further training of doctors and nurses.

Supported the School of Hygiene and Public Health of the Johns Hopkins University.

Contributed to the teaching of hygiene in the medical school at Sao Paulo, Brazil.

Provided fellowships in public health and medical education for ninety-three individuals who represented thirteen different countries.

Brought to the United States commissions of medical teachers and hygienists from England, Belgium, and Czechoslovakia.

Continued to support a campaign against yellow fever in South and Central America and in West Africa.

Aided government agencies in the control of malaria in ten states of the South.

Prosecuted hookworm work in ten southern states and in eighteen foreign countries.

Helped to expand antihookworm campaigns into more general health organizations in countries, states, and nations.

Brought a war-time antituberculosis work in France to the point where it could soon be left entirely in French hands.

Assisted the government of Czechoslovakia to reorganize its public health laboratory system.

Rendered various services in organizing committees to study the training of nurses and of hospital superintendents, lent experts for conference and counsel, sent officers abroad to study conditions, etc.

Brought to a close its participation in war-time emergency relief by giving a million dollars to the fund for European children.

FOOT-WEAR

This compound word has a compound significance. Not only does it include the object which is worn on the pedal extremity, either as an article of adornment or a means of comfort, according to the degree to which the wearer is enslaved to fashion; but it applies, also in the abstract sense, to the capacity of the foot to withstand the wear and tear to which it is subjected both by the small number of sensible individuals who realize the limitations of the bodily mechanism and by the much larger percentage of exacting persons, generally of the feminine persuasion, who expect more of their feet than they do of their husbands. The weaker sex, however, is not alone at fault in this respect. There are still a few of the male element, mostly of the younger generation, who cling to the shoe which is supposedly more attractive to the objects of their devotion. The recent war made not a few converts to sensible foot-gear, and would have made more had it always been possible to convince the quartermaster that a size ten shoe was entirely too commodious for a size seven foot. Even the nurses unwillingly admitted that the army shoe was the most comfortable they had ever worn, but, immediately on returning to their former modes of life, they again adopted the stylish but distorted foot garb. Such are the force of habit and the enslavement to fashion.

The foot is a mechanical contrivance and will not produce the most efficient service unless it is allowed to produce that service in the natural way. Who would attempt to interfere with the divine plan by encasing the hands in close-fitting gloves and then attempt to execute a chromatic etude on the piano. But, inconsistently, we restrict the normal mechanism of the feet by unnatural apparel, and then exclaim if they fail to deliver the goods.

First let us learn how to stand and walk correctly and then we will demand shoes which will

permit such correct use of the feet. It is already considered old-fashioned to stand or to walk with the forefoot turned out. A square base is mechanically a better support than a trapezoid, and with the feet held parallel the muscles are under better control and the arch suffers less strain. It is the difference between a passive and an active position. It is the position most children first assume. It is the natural one. The mother must learn this, and not worry lest the child shall grow up pigeon-toed.

By close observation of the pedestrians on a downtown street, one not intimately acquainted with the anatomy of the foot might be led to believe that there was one articulation below the knee instead of thirty-eight articulations. And yet most persons would be just as graceful had they no foot movement below the ankle-joint. If, instead of the flat-footed, toed-out, stiff gait affected by most people, the average person would toe straight ahead, use the instrinsic muscles of the foot, control the weight and the progression of the body with the forefoot, and acquire a spring in each step, the result would be a less tiresome, more graceful, and more invigorating means of locomotion, and would reduce, by a large percentage, the foot trouble that is today reducing the efficiency of the American people.

To allow the foot this proper functioning, it is absolutely essential to have a proper shoe. Briefly, it should have these qualifications: a low, broad, long heel; a straight inner edge, and broad toe with the greatest depth over the big toe to allow room for flexion and extension of all the toes and for abduction of the big toe; a sole thick enough to prevent curling up at the edges; a narrow shank and a long vamp.

To be sure, the work which the foot muscles can do without rest and fatigue varies with the individual, and in the same individual is affected by the functioning of the rest of the body. If the general health is below par, the foot musculature will correspondingly suffer. All the more need to have the feet clothed in a shoe which will not restrict normal movements.

Let us then get busy and educate parents and others who have charge of the training of children to teach them the value of exercise and the correct use of the feet and the necessity of normal shoes. It would be too much of a revolution to expect to accomplish this in one generation, but, by constantly keeping the facts before the growing youth, it will eventually sink in, and we shall have a more graceful, more efficient, and less irritable population, and the homely shoe will become decidedly fashionable.

BOOK NOTICES

Modern Surgery, General and Operative. By John Chalmers DaCosta, M.D., LL.D., F.A.C.S., Samuel D. Gross, Professor of Surgery, Jefferson Medical College, Philadelphia. Eighth Edition. Cloth. Price, $8 net. Pp. 1,697, with 1,177 illustrations. Philadelphia: W. B. Saunders Company, 1919.

By this eighth revised and enlarged edition, which appears as an octava of 1,697 pages and 1,177 illustrations, we are reminded of the growth of surgical literature in the past five years. For years this volume has given to students and practitioners in a simple, concise manner, not only the views and opinions of a teacher of experience, but also the accepted surgery of the profession.

In the preface the author refers to difficulties encountered in revising the work under war conditions; however, the chapters on "Carrel-Dakin Technic"; "Treatment of Compound Fractures"; and "Osteomyelitis" have been completely covered.

In the treatment of empyema, the author maintain- that pus in the pleural cavity should be drained as soon as recognized. Throughout the text the author asserts his personal views and experience which gives to the reader a view-point not often found in the average text-books. For instance, after a complete review of the subject of goiter we read: "My personal experience in exophthalmic goiter is small; in fact, I know of no one in Philadelphia who has performed any great number of operations for it. I have performed thyroidectomy for exophthalmic goiter fourteen times with two deaths." We predict its continued popularity among students and practitioners.

F. S. McKinney, M. D.

The Radiography of the Chest, Vol. 1, Pulmonary Tuberculosis. By Walker Overend, M.A., M.D. (Oxon), B.Sc. (Lond.). Hon. Radiologist and Physician to the Electrotherapeutic Department, East Sussex Hospital (Hastings); Radiologist to the City of London Hospital for Diseases of the Chest (during the War); late Chief Assistant in the *X*-Ray Department, St. Bartholomew's Hospital; Physician to the Prince of Wales' Hospital, London, and Radcliffe Traveling Fellow. St. Louis: C. V. Mosby Company, 1920.

This volume is one of two, and is devoted entirely to the description of pulmonary tubercle. The manufacture and installation of more powerful apparatus, the improvement of special technic, as well as the gradual accumulation of knowledge during the past decade, have enhanced greatly the value of *x*-ray examination in the diagnosis and prognosis of chest diseases.

The author, realizing the difficulties of a radiological classification, nevertheless presents one describing the majority of types of pulmonary tuberculosis with the common localities of incipient disease. Under the vari-

ous types, subheads are given when necessary, and the data of the physical examination are summarized and included with the radiogram.

The radiograms are numerous, clear, and admirably selected to represent type. Radiograms of non-tuberculous conditions are inserted which may simulate the type described, and are valuable in differential diagnosis.

This small volume represents a clean-cut presentation by means of the *x*-ray of the various types of pulmonary tuberculosis seen by the clinician, and it should be a valuable prognostic and diagnostic aid to him in accounting for the symptoms and physical signs present.

F. W. Wittich, M. D.

NEWS ITEMS

Dr. J. O. Lunn has moved from Edgemont, S. D., to Wing, N. D.

Dr. J. C. Rogers has moved from White Lake, S. D., to Los Angeles, Calif.

Dr. S. Rosenthal has moved from Java, S. D., to Aberdeen, S. D.

Dr. J. A. Opstedal has moved from Cavalier, N. D., to Chippewa Falls, Wis.

Dr. F. W. Briggs, has moved from Fargo, N. D., to Duluth, Minn.

The women of the Emanuel Church at Elgin have opened a hospital at that place.

Dr. B. A. Smith, of Crosby, has been attending surgical clinics in Chicago.

Montana is to build a new hospital for its insane at Warm Springs to cost $100,000.

Dr. R. E. Adkins, of Billings, Mont., has accepted a position in a sanatorium of Boulder, Colo., and will move to that city.

A "home brew" made with Minnesota River water near Shakopee was the cause of several cases of typhoid fever near the "brewery."

Dr. O. S. Werner, of Lindstrum, has purchased the Weum Hospital at South Haven. The hospital building is thoroughly equipped, and Dr. Werner will make it an up-to-date hospital.

Dr. W. H. Bates, now of New York City, but formerly of Grand Forks, N. D., has written a book on "The Cure of Imperfect Sight by Treatment without Glasses."

We are asked to state that Dr. Rollier has arranged to give a short postgraduate course of demonstrations on heliotherapy at Leysin, Switzerland, from August 16 to August 20.

Dr. R. J. Chesley, Executive Officer of the Minnesota State Board of Health, recommends that all city water-reservoirs be covered and that all surface water near such reservoirs be drained off.

The Aberdeen Hospital (a Government hospital) in St. Paul was charged last month with inhuman treatment of its wards, investigated by a committee of high-grade citizens, and fully exonerated.

Dr. F. E. Harrington, Director of School Hygiene, Minneapolis, will exammie 10,000 Minneapolis school children during the coming school year with reference to tuberculous conditions among them.

It took a jury just fifteen minutes to decide a malpractice suit against Dr. C. D. Conkey of Duluth, in his favor. The case against Dr. Conkey, like most malpractice suits, had not the faintest hope of success.

The June or second 1921 class graduating from the Medical School of the University found interne ships in the following cities: Minneapolis, St. Paul, N. Y. City, Newark, Cleveland, Toledo, Ann Arbor, Milwaukee, Bismarck, Los Angeles, and Vancouver.

Dr. A. N. Collins, of Duluth, is one of the principal boosters for the Commercial Club of that city. He thinks the doctor's influence should be felt in the civic work of every city, and the common meeting-ground for the physician and the business man is the city's commercial club.

The Sioux Falls (S. D.) District Medical Society published a program of its monthly meeting at the beginning of the year, and thus far the program for 1921 has been carried out. The program for August contains but one paper, which is by Dr. F. A. Spafford, and is on the "Newer Therapeutic Agents."

The Macabees, a national fraternal and insurance organization, met in Duluth last week, when it was announced by the medical director of the insurance department that Minnesota, Wisconsin, Iowa, and the Dakotas are the most healthful part of the United States, and that Duluth has the lowest death-rate of Minnesota cities.

The Sioux Valley Eye and Ear Academy held its seventeenth semi-annual meeting at Omaha, Neb., on July 12. The program consisted of eleven papers and a "round table" discussion after dinner. The Academy is a flourishing society, and its meetings are always helpful. It has an efficient secretary, Dr. L. N. Grosvenor, of Huron, S. D.

Dr. C. D. Conkey, who has practiced many years in Duluth and Superior (Wis.), will make Los Angeles, Calif., his future home. The Commercial club of Superior and the Douglas County Medical Society gave Dr. Conkey a farewell banquet last month, and told him to his face many of the goods things he has done in that city for many years past.

The "World do move." The Osteopaths of Minneapolis have established a hospital, the first Osteopathic hospital in the world's history; and a Chiropractic sanatarium has been opened "where you can get efficient treatment that cures without stomach-ruining medication." We have heard of a double negative, "but efficient treatment that cures" seems to be a double positive.

The epidemic of an unusual form of meningitis in Wadena and adjoining counties in Minnesota has now numbered from 300 to 500 cases with only ten deaths. It is not the old form of meningitis, for only about 10 per cent of the cases show any muscular involvement, and no after-effects follow the disease, whose course extends over only four or five days.

Dr. William F. Wild, the new Executive Secretary of the Minnesota Public Health Association, who succeeds Dr. H. W. Hill, has outlined a big program of private health work in the state. The work of last year, as summarized by the Executive Committee, is notable for its magnitude, and, it is to be hoped, for its usefulness. The Association is worthy generous support just so long as its management is efficient, economical, and free from aiding private interests.

The physicians of Duluth are heartily cooperating in the establishment of a physicians' telephone exchange, closely following the plan of the Physicians' Exchange of the Twin Cities, whose success has been observed by them and whose work has been highly commended by its members in the Twin Cities. It's a long road to success, but the necessity for such an exchange is unquestioned.

The annual meeting of the Sioux Valley Medical Association was held in Sioux Falls, S. D., on July 20-21, with a large attendance from South Dakota, Iowa, and Nebraska. Dr. R. E. Farr, of Minneapolis, presented his moving pictures on local anesthesia. All other papers were presented by members of The Association. THE JOURNAL LANCET was made the official organ of the Association wholly without solicitation, and will publish the transactions and papers in future issues. Dr. John P. Lord, of Omaha, Neb., is the president, and Dr. J. A. Dales, of Sioux City, Iowa, is the secretary, of the Association.

The annual meeting of the Medical Association of Montana was held in Billings, Mont., on July 13 and 14, and the Montana Public Health Association held its annual meeting at same time and place. Dr. Thos. Parsons, of the U. S. P. H. S. attended the meeting and spoke on "Public Health Work and Private Practice." Drs. W. F. Braasch, of Rochester, and Dr. Frank Smithies, of Chicago, were the other outside speakers at the Medical Association. The following were elected officers for next year: President, Dr. W. W. Andrus, Miles City; first vice-president, Dr. C. F. Watkins, Billings; second vice-president, Dr. A. Dolan, Great Falls; third vice-president, Dr. P. S. Reinick, Stevensville; secretary-treasurer, Dr. E. G. Balsam (re-elected), Billings; delegate, Dr. C. T. Pigot, Roundup; alternate, Dr. J. M. Scanland, Warm Springs. The meeting next year will be held at Great Falls.

POSITION AS LOCUM TENENS WANTED

By a man with ten years experience in general practice. Licensed in Minnesota. Address 155, care of this office.

LOCATION WANTED

By a young graduate of a Class A school with considerable experience, preferably in Minnesota, North or South Dakota. Address 158, care of this office.

SANITARIUM PHYSICIAN WANTED

A good physician to take charge of the medical department of a Minnesota Sanitarium. Give all particulars with salary expected. Address 156, care of this office.

OFFICE POSITION WANTED

Young Woman with ten years experience desires position with a doctor in Minneapolis having a large general or surgical practice. Can do office nursing, stenography, bookkeeping and routine laboratory work. Address 154, care this office.

POSITION WANTED BY LABORATORY AND *X*-RAY TECHNICIAN

Has had extended experience in large hospital and dispensary laboratories, and can give best of references, will go outside of Twin Cities. Address 152, care of this office.

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Office and laboratory in the P. and S. Building (Nicollet and Ninth), Minneapolis, will be rented part of the day at a reasonable price. For information call Gladstone 1430.

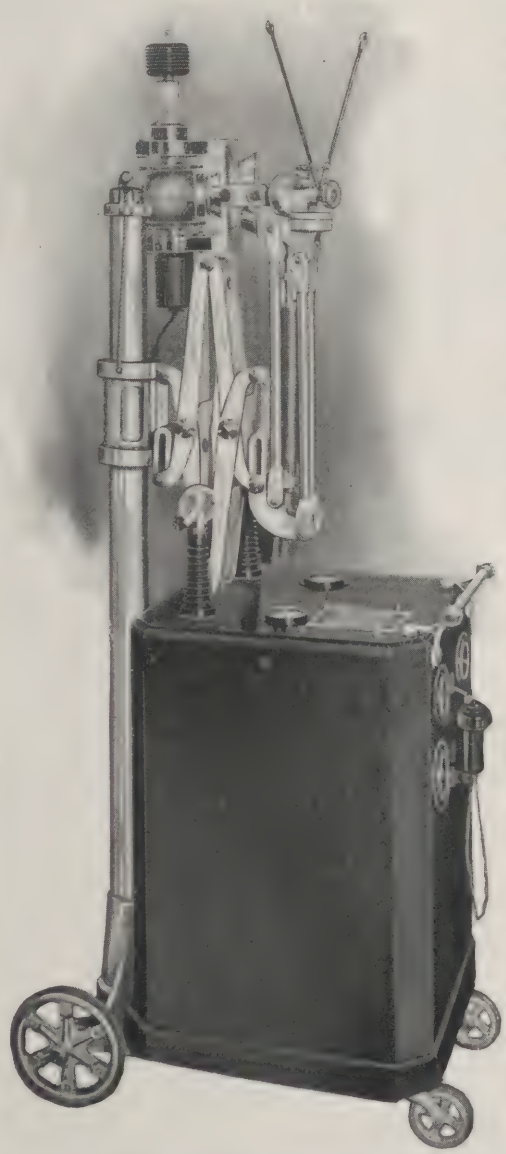
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Desires position after August 1 up to Sept. 1. Does all routine laboratory work, besides spinal fluid and cutting tissue. Also a good dietician. Now engaged in a sanatorium, but prefers hospital work, Excellent references. Address 153, care of this office.

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Developments in X-Ray apparatus have created the demand for a compact, flexible, reliable, automatic and durable self rectifying X-Ray unit.



The ***International Universal unit*** Incorporates all these features in a unique and thorough manner. The Electrical design and operating features are fundamentally correct. It is as nearly automatic as an X-Ray Machine with a variable back-up and milliamperage can be.

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The Directors of the Laboratories are always at your service for personal cooperation in all diagnostic problems.

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We do the classical test. Any of the various modifications will be made upon request, without additional charge. Sterile containers, with needle, gratis upon request.

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The Management of an Infant's Diet

DIARRHEA

The importance of nourishment in intestinal disturbances that are so common during the warm weather is now recognized by physicians, and it is also appreciated that the nutrition furnished must be somewhat different than the milk modification usually supplied to the normal infant.

Food elements that seem to be particularly well adapted, mixtures that are suitable to meet the usual conditions, and the general management of the diet, are described in our pamphlet—"The Feeding of Infants in Diarrhea"—a copy of which will be sent to any physician who desires to become familiar with a rational procedure in summer diarrhea.

MELLIN'S FOOD COMPANY, BOSTON, MASS.

PUBLISHER'S DEPARTMENT

NEW PRODUCTS OF THE ARMOUR LABORATORIES.

Armour and Company announce the addition of the following preparations to their list: Suprarenal Cortex, Suprarenal Medulla, Placental Substance.

Physicians desiring to use these products may get them from headquarters for the organotherapeutic agents.

THE NEW PRESIDENT OF ABBOT LABORATORIES.

Dr. Alfred S. Burdick has been elected to fill the vacancy as President of The Abbott Laboratories, caused by the death of Dr. W. C. Abbott.

He is a graduate of the Alfred University, Alfred, N. Y., and Rush Medical College, Chicago. He has been closely associated with The Abbott Laboratories for over seventeen years, and for the past six years has been Vice-President and Assistant General Manager.

INTERNATIONAL *X*-RAY CORP. OF NEW YORK

Mr. Ivan L. Hewitt, formerly connected with the Victor X-Ray Corporation, has opened an x-ray and electro-medical supply office in the Hamm Building, St. Paul. Mr. Hewett is now Northwestern distributor for the International *X*-Ray Corporation and the McIntosh Battery & Optical Company. He also carries in stock a complete line of *x*-ray accessories and supplies.

The International unit is one of the latest and most highly developed *x*-ray units on the market and contains many desirable features not found on other models.

The illustrated circular of this apparatus is full of interest, and everyone interested in *x*-ray apparatus will find it of large value. It will be sent free to any physician or dentist asking for it.

A GREAT INVESTMENT OPPORTUNITY

The Northern States Power Co., of Minneapolis, is now offering the public its preferred stock at a price that will net the purchaser 8 3 per cent. This offer is made because the Company's expansion is so great that larger capital is demanded to care for the needs of its customers. This expansion is shown in the following exact figures:

1. In 1912 the Company served 36 cities and towns; it is now serving 290 cities and towns.

2. In 1912 it served 48,000 customers; it is now serving 151,000 customers.

3. In 1912 it had 2,000 stockholders; it now has 16,000 stockholders.

Its connected load now amounts to 359,000 horsepower.

This is a splendid record of growth; the Company's service to the public has been uniformly excellent; and it has maintained the confidence and good-will of the people.

Its stock is worth holding, and no doubt will rapidly increase in value as the country recovers from the war depression.

PHYSICIANS & HOSPITAL SUPPLY CO.

This Company announces on another page that it now carries in refrigerator storage a complete stock of the biological products of the H. K. Mulford Co. and Lederle Laboratories, thus placing at the command of their customers the hay fever pollen extracts, typhoid vaccine, rabies vaccines, and tetanus antitoxin, all of which every practitioner may want on short notice.

The above constitutes a splendid addition to the Company's line of supplies for physicians and hospitals, which is now complete, including instruments, general equipment, drugs, chemicals, laboratory supplies, *x*-ray plates, films, and accessories.

The individual physician or the hospital will find in the Company's show-rooms, (413 South Sixth Street, Minneapolis,) everything needed in their respective lines, and every transaction (with the Company) must result in the customer's satisfaction.

N. P. BENSON OPTICAL CO., INC.

This Company prides itself on the degree of perfection it has attained in serving the general practitioner, especially outside the larger cities, who does optical work and demands that his prescriptions shall be filled promptly and economically, while giving the patient an unsurpassed service. This end has been attained by the Company through long experience, the employment of experts in its various departments, and the large stock carried, both in its main establishment in Minneapolis and in its branches in Duluth andAberdeen.

Some of the Company's specialties are mentioned in its card in our journal from time to time; but its real work is best obtained by correspondence with or visit to one of its houses.

NEW OFFICES.

Mr. Arthur W. Isca, who sells medical books, has moved from the Tribune Annex Building to the Besse (formerly Pillsbury) Building and has rooms on the sixth floor (617) with Mr. C. F. Anderson, who deals in surgical specialties.

THE CHICAGO LABORATORY.

If the value of the work of the public or commercial laboratories of the country is questioned at all or is unknown to many medical men, such men are not those who maintain private laboratories and are best able to judge of the worth of the commercial laboratory. In many of the private laboratories only routine work is done, which is but a small part of modern laboratory work. Such men patronize the commercial laboratory, sending it the greater part of all their work.

The Chicago Laboratory (25 E. Washington St., Chicago) is one of the leading public laboratories in the country, and maintains a corps of high-grade men whose professional standing commends their work. Their announcement appears on our front cover page the first of each month, and gives a full statement of the work they do.

A PRESCRIPTION NOT COPYRIGHTED.

"There is a prescription that is not copyrighted. It would be most pleasurable were it generally appropriated and used.

I am not adding to the commendation of Pneumo-Phthysine in the treatment of broncho-pulmonary disorders. It is assuredly of notable value in bronchitis, pneumonia, influenza and croup; but, as Kipling says, that is another story, and a very good and interesting story. The prescription, however, has another relationship.

Adenitis.—I am prejudiced against adenectomy. I do not believe in "removing" the adenoids or the tonsils, as a rule. I think it is many times a needless surgical measure.

Corollary, I do not recognize that the glandular hypertrophy is always necessary. It is my experience that where the hypertrophic tendency exists, the exhibition of Pneumo-Phthysine is decidedly prophylactic. I hand out that prescription to the parents and school teachers, with the added admonition to cut out the chewing of gum. Again, in cases where the operation has been advised, if I can get the patient to have the prescription filled, and to take the remedy, the chances are that it will obviate the use of the knife.

By the way of feuilleton, let me say the Pnuemo-Phthysine is showing itself of value in treating affections of the prostate, but at present my experience in this direction is limited."

The physician of Hartford, Conn., who sent the above testimony accompanied it with the following: "The enclosure is neither a formal certificate nor a crude "testy-menial." Instead, I hope that it "speaks for itself" as a plain good-word from a practitioner with 42 years practical professional experience. Please accept it with my compliments."

ADJUST THE FOOD TO SUIT THE BABY, NOT THE BABY TO SUIT THE FOOD.

Modern infant feeding calls for a formula that is suited to the individual requirements of the individual baby.

The use of so-called "foods" in the diet of infants is fast losing its popularity, because the physician now realizes that an infant deprived of breast milk must be fed as an individual; that the nourishment derived from all so-called "foods" is principally from cow's milk; that these foods do not contain any mysterious life-giving elements, but are merely modifiers of cow's milk. It is also known by the physician that, while some of these "foods" contain elements that are of value to the infant's health and well-being, the value they might have in modifying cow's milk is completely lost to the physician, because when once prescribed the physician no longer controls his case. The directions for use contained on the packages of infant "foods" advertised to the laity is the unsurmountable wall that differentiates between individual infant feeding and indiscriminate infant feeding.

Mead Johnson & Company, of Evansville, Indiana, offer a full line of Infant Diet Materials which may be used by the physician with perfect confidence. Their products,—Mead's Dextri-Maltose (Malt Sugar), Mead's Barley Flour, Mead's Dry Malt Soup Stock, Mead's Casec (Calcium-Caseinate) for preparing Protein Milk are all supplied without directions on the trade packages. Many physicians have learned that these products are reliable and may be depended upon.

Mead's Dextri-Maltose is prepared in three forms and is suitable for the average feeding case. No. 1 contains sodium chloride and is most extensively used; No. 2 contains no salt whatsoever, and is offered to the physician in order that he may add any salt he desires; No. 3 contains potassium bicarbonate and is used for the baby that is suffering from constipation.

The policy adopted by Mead Johnson & Company of "no directions on the trade packages" means the realization of an ethical ideal.

Mead Johnson & Company would be very glad, indeed, to comply with any request for samples of their Infant Diet Materials and literature regarding the uses of these products.

THE OTTAWA TUBERCULOSIS COLONY.

This Colony is the pioneer tuberculosis institution in the Middle West, and its growth is evidence of its successful management. It grew out of a movement started in 1904 in the Illinois State Medical Society, and its founder, Dr. J. W. Petit, has a national reputation as a writer on tuberculosis.

The Colony began as a tent colony; it now has a fine "Club House," a "Medical Building," the "Apartments," the "Annex," and tent cottages. The equipment throughout is unexcelled.

The treatment does not consist of a fad or a number of fads. It is hygienic, dietetic, and medical, including vaccines and serums, together with environment.

The institution is situated on the banks of the Illinois River, one mile from Ottawa, Ill. Its rates are very reasonable.

The pamphlet issued by the Colony can be obtained from the Chicago office, 202 South State St. or from the Ottawa office; and it is interesting and instructive.

CLINICAL INDICATIONS FOR DOSAGE IN VACCINE THERAPY.

The polyvalent bacterial vaccines should not be administered without a knowledge of the clinical indications for the dosage, which knowledge Dr. G. H. Sherman, head of the Sherman Bacteriological Laboratories (Detroit, Mich.), gives in a circular which he will send to any physician upon application.

Dr. Sherman has done a large work in educating the profession in the use of the polyvalent bacterial vaccines, and the product of his laboratories has been extensively used by medical men all over the country. His services are at the command of every physician.

THE APPETITE IN TUBERCULOSIS.

In view of the fact that hypernutrition, or so-called forced feeding, constitutes one of the important indications in the treatment of many cases of tuberculosis, more than ordinary attention must always be devoted to maintaining the appetite. Unfortunately, many of these patients have an aversion to the very foods which are best adapted for repairing and resisting the ravages of the disease. It is here that Gray's Glycerine Tonic Comp. serves one of its most important purposes, by reason of its notable capacity to awaken a deficient appetite in a perfectly natural manner. It not only possesses the desirable feature of great palatability but through its tonic properties, it never fails to impart just the right tone to the digestive organs. Thus the effects are so much more permanent and far reaching than are obtained from ordinary stomachics, that not only are larger quantities of nourishment freely taken by the patient, but a correspondingly increased amount finds its way to the remote tissues.

DIAMOND ANTISEPTIC SOAP.

Diamond Antiseptic Soap contains one per cent of mercuric iodide and is eminently suited for use wherever a disinfectant or cleansing agent is desired, as in disinfecting the hands and surgical instruments.

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JOURNAL-LANCET

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Minnesota, North Dakota, South Dakota, and Montana

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North Dakota and South Dakota State Medical Associations

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Traasactions of North Dakota State Medical Association, 34th Annual Meeting 1921

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Proceedings of the House of Delegates

FIRST SESSION, THURSDAY, MAY 26, 1921

The first session of the House of Delegates of the thirty-fourth annual meeting of the North Dakota State Medical Association was called to order at the Masonic Temple, Fargo, North Dakota, at 8 A. M., May 26, 1921, the President, Dr. Fred Ewing, Kenmare, presiding.

The Secretary, Dr. H. J. Rowe, Lisbon, called the roll. A quorum being present, the House of Delegates was declared duly constituted for the transaction of business.

In the absence of Dr. T. Mulligan, Grand Forks, it was moved by Dr. G. M. Williamson that Dr. A. C. Dean, Grand Forks, sit in Dr. Mulligan's place during such absence. Motion seconded. Carried.

As the minutes of the 1920 annual meeting had been published in the official organ of the Association, THE JOURNAL-LANCET, on motion duly seconded, the reading of the minutes was dispensed with.

SECRETARY'S REPORT

The Secretary presented the following report:

The year has passed quickly and we are again called upon to report the conditions of the medical fraternity of this state.

The annual reports from the component societies are encouraging, albeit somewhat late in reaching the state secretary's office.

To date three hundred and ninety-nine of the physicians have come across and are in good standing in the several local societies. There will undoubtedly be some additions, as there always are; some men are away from home taking a respite from their labors, and others are taking a postgraduate course during the slack season of the year. It is to be regretted that so many of the physicians of the State are not associated with the local societies to which they rightfully belong. The last American Medical Directory contains the names of five hundred and forty-eight physicians in North Dakota, which means that more than one hundred and fifty or more than one-fourth of the doctors of the state are not associated with the medical societies of the state.

A good clerical officer—and we have some—who is acquainted with the men in the district over which he presides, is very essential, and, when such an one is found, he should be retained in office, since he becomes acquainted with the characteristics and idiosyncrasies of his associates and is better qualified to insist on prompt payment of dues. The frequent custom of changing secretaries in some of the local societies, putting into office new men inexperienced in clerical work and timid in insisting on the payment of dues by old practitioners, occasions a great deal of unnecessary labor and friction that should be avoided.

The usual number of malpractice suits to harass a medical man's career, continue to come up for settlement annually. So far this past year, the Association has been called on to pay the expenses of but one lawsuit, which cost three hundred and forty dollars, a report of which will be submitted by the retained legal advisers of the state association.

THE JOURNAL-LANCET is sent to all practitioners who are in good standing but occasionally there is a lapse of some doctor's name, which, if called to the attention of the publishers, would be speedily corrected and prevent sending a dun to some innocent doctor whose name had been omitted in transcribing the alphabetical roster. The subscriptions paid THE JOURNAL-LANCET since our annual meeting in 1920 amounted to $604.00.

The Second International Eugenics Congress requests the honor of the presence of a delegate from the North Dakota State Medical Association and encloses a card giving the cost of an active or supporting membership.

Fraternally submitted,

H. J. ROWE, M. D., Secretary.

REPORTS OF THE COUNCIL AND COUNCILORS

Reports of the Council and Councilors were then presented, as follows:

THE COUNCIL

The Council as a body has held no special meetings during the past year, but individual Councilors have taken an active part in keeping up their interest in their local societies.

The reports of such Councilors as have responded to the request of the chairman for information as to the activities of their society, are herewith attached.

Whilst the Constitution of the State Association apparently intends that each Councilor shall visit individual members of the profession in his District at least once a year, this is not practicable in some parts of the state.

It would really appear to be better for the State Association to employ a paid organizer who could devote at least a month each year in organization work throughout the state.

In accordance with the resolution passed at the State Association meeting at Minot the following local societies devoted one meeting to the discussion of venereal disease, at which the film "The Modern Diagnosis and Treatment of Syphilis" was shown: Devils Lake, Grand Forks, Sheyenne Valley, Sixth District, and Tri-County.

Respectfully,

F. R. SMYTH, M. D., Chairman of Council.

The Secretary read the following reports:

CASS COUNTY MEDICAL SOCIETY

The District over which I am councilor comprises the counties of Cass and Ransom, the latter county affiliating with Cass County, said society being known as Cass County Medical Society. Richland County Medical Society is also in my district. Richland County has eighteen members. They have had two meetings during the past year with a good attendance. They have had no clinical programs nor have they had any men from the outside give any papers. Richland County has two doctors that do not belong to the County Society.

Cass County Medical Society has sixty-two members, which is an increase of ten in the past year. We have had five meetings during the past year with an average

attendance of twenty-four. Three men from the outside have read papers and one attorney talked to us on medicolegal matters. Cass County has had two joint meetings with Grand Forks and Trail-Steel Medical Societies.

Respectfully,

P. H. Burton, M. D., Councilor.

Grand Forks District Medical Society

The Grand Forks District Medical Society comprises the counties of Grand Forks, Walsh, Pembina, Cavalier, and Nelson. Meetings are held on the second Wednesday of each month at Grand Forks.

During the past year twelve meetings were held, all being well attended and much interest taken in the subjects presented. Papers by pioneer practitioners regarding their practice in the early days were enjoyed by younger members of the Society and were valuable contributions to the history of medicine in this state.

There are eighty-four registered phyisicians living in the district; sixty-nine of this number are members of this Society; four are members of adjoining societies; and there are, eleven non-members, all of whom are eligible for membership, but, I presume on account of indifference as regards the welfare of the profession they remain on the outside. We have four members of our Society who do not live in the district. Our total membership is seventy-three.

Two deaths occurred during the past year. Dr. Samuel H. Irwin and Dr. Frederick J. Duggan, both pioneer physicians, beloved by the profession, and both leave an honorable record of faithful service in the community.

We have had as president during the past three years a man who has been untiring in his efforts to keep interest and enthusiasm in the Society, and his splendid work is appreciated by the entire membership. We are also fortunate in having an energetic secretary. Good secretaries of local societies are rare, and I might say, the Grand Forks District is fortunate in having a live Society and a worthy and efficient staff of officers.

G. M. Williamson, M. D.,
Councilor.

Report of the Sheyenne Valley Medical Society

Our Society serves the doctors of Barnes and Griggs Counties.

There are twenty-three doctors eligible to membership, of which number we have twenty-two in good standing. We have added three doctors during the year, namely, Drs. Stixrud, Kellogg and Moore; in the same time we have lost two, namely, Dr. Irvine, by his removal to Texas and Dr. Caldwell, by transfer to a Minnesota society, a net gain of one, there being no death in our membership.

All of our men are regulars; there are no illegal practitioners.

Our meetings are held in Valley City.

At our annual meeting and banquet, held on January 20, we had the pleasure of having with us President Ewing and Dr. Smyth. We first met at the Rex theatre where Dr. Smyth presented the film, "The Modern Diagnosis and Treatment of Syphilis," this being shown to the members of our Society and to other professional people entitled to see it. A banquet followed at which our guests addressed us. The film was discussed and a report of the American Medical Association meeting as well as the meeting of the American Congress of Surgeons was given by Dr. Pray.

Our spring meeting was a banquet meeting with a good attendance, and our entire time was given to reports and discussions of interesting cases, among which were the following: "Congenital Stenosis of the Pylorus," "Uterine Inversion," "Placenta Praevia," "Focal Infection with Ocular Manifestations," "Cyclic Vomiting," "Ileocecal Intussusception," and others. Every member took part.

This year's meetings have been attended with much interest, and, in my belief, some of the most interesting in my experience in the Society.

F. L. Wicks, M. D.,
Councilor.

Sixth District Medical Society

The Sixth Councilor District includes the Sixth District, the Southwestern District, and the Stark County Medical Societies, with a total membership of eighty-one.

The Sixth District Society has held regular meetings and had very interesting papers and discussions. The meetings have been well attended, and much interest has been shown by those present.

A letter was sent to the different medical societies in the western half of the state suggesting that a combined district meeting should be held at least once a year at which prominent physicians from outside the state could be asked to take part. So far no arrangement has been made for such meetings, but it is hoped that something along this line can be formulated at the state meeting.

F. R. Smyth, M. D.,
Councilor.

Southern District and Richland County Societies

Three meetings have been held during the year, and all fairly well attended.

The different members of the Southern District Medical Society being so widely scattered, it has been very difficult to get very many out to the meetings, or to get up the proper enthusiasm for successful gatherings.

L. B. Greene, M. D.
Councilor.

Stutsman County Society

Stutsman County Medical Society has twenty-three members. During the year two members were lost and eight gained. All licensed men except one belong to the county society.

The annual banquet was held on May 2, when two papers were read.

There were no deaths in the profession during the year.

Dr. L. G. Smith, M. D.,
Councilor.

Tri-County Society

The organized medical activities of the territory included within the boundaries of the Tri-County District are confined to the parent organization. The district covers Wells, Foster, and Eddy Counties. The Society has one member from Oberon, Benson County, and one from McClusky, Sheridan County, railway facilities favoring us in this choice on their part.

We have lost three members by transfer in the past year and gained only one. Dr. A. J. Clay, for many

years at Bowdon, transferred to Cass County. Dr. Frank C. Titzell at Harvey for a short time, removed to Stutsman County Society, and Dr. W. H. Moore, formerly of Sykeston and later of Harvey, transferred to Sheyenne Valley Society. Our loss of Dr. Clay at Bowdon was made up by the acquisition of Westervelt. Fortunately, we have not lost any member by death.

Only four meetings were held during the year, two of them at Carrington, one at New Rockford, and one in Harvey.

Of scientific papers there were none during the year, but there were at each meeting many interesting clinical cases cited, followed by free discussion. One splendid essay on the diagnosis and treatment of syphilis was delivered by a member at a recent meeting, at which were present our President, Dr. Ewing, and Major Smyth of the U. S. Public Health Service, whom we were delighted to have with us as guests.

Major Smyth favored the Society and the community by presenting, at the Carrington Opera House, the U. S. P. H. S. film on venereal diseases. Quite a number of local dentists and nurses, as well as those from surrounding towns and others interested in public health, were present. President Ewing gave a stirring address on organized medical effort.

On the 19th and 20th instant your Councilor made a circuit of the district by automobile, visiting all the members of the Society, except one who was out of town, and found a cooperative spirit manifest between the local medical men in each community.

CHAS. MACLACHLAN, M. D.
Councilor.

DEVILS LAKE DISTRICT MEDICAL SOCIETY

The Devils Lake District comprises the counties of Benson, Pierce, Rolette, Ramsey and Towner, five counties. We have in that district forty-six practitioners, thirty-one of whom are members of the Society. I believe I have not worked quite as effectively as I should have done, for I could probably get into the Society two or three more of the fifteen non-members. On meeting them I suggest that they join. They ask for a blank, but do not send it back.

During the past year I have been absent for about six months, but meetings have gone on just the same, and all our meetings are highly successful. The average attendance is twelve, but sometimes twenty men are present. The district is large, and we can hardly expect that the men who live far away will attend very often, and that is the principal excuse of non-members for not joining—they are so far away that they would not attend the meetings anyway, and do not see how they could be benefited by being members. So they are careless about it.

We have not had any deaths during the past year, and in fact, so far as I know, it has been twelve or fifteen years since we lost a member by death in this district.

The members who attend the meetings are from the Devils Lake usually, although some in the country attend quite regularly, and they deserve much credit for their faithfulness to the Society.

G. F. DREW, M. D.,
Councilor.

TRAILL-STEELE MEDICAL SOCIETY

The Traill-Steele Medical Society has eleven members, comprising all the doctors in the two counties. There have been no deaths in our Society. During the year we have had four meetings. A suggestion was made by the Cass County Medical Society that we merge our Society with theirs, but we decided to retain our own organization.

O. A. KNUDSON, M. D.,
Councilor.

NORTHWESTERN DISTRICT MEDICAL SOCIETY

On behalf of the Northwestern District Medical Society, I have to report that the Society has enrolled sixty-nine members, fifty-four of whom are at the present time in good standing. Last year we had sixty-two members. The Society has met every three months. During the past year we have had a number of good papers and clinical demonstrations. The first meeting of the year was given up to election of officers and to social features, and, I believe, that once during the year we had Dr. F. R. Smyth with us and gave the meeting over to him for his talk on venereal problems. We have had no deaths in the past year.

Regarding the Kotana Medical Society, I have written them for their report and have not as yet received it. I would suggest that, if possible, there should be a different councilor appointed for the Kotana Society, because the Kotana district is west of us and so located that our Society cannot very well follow the activities of that Society, and I see no reason why they should not have their own councilor. Each year that I have been serving as councilor it has been difficult to obtain a report from the Kotana Society, and, if it is regular and proper, I suggest that it would be better for them to have a councilor of their own.

E. M. RANSOM, M. D.,
Councilor.

Dr. W. C. Fawcett, Starkweather, moved that the reports of the Councilors be accepted. Motion seconded and carried.

COMMITTEE ON NECROLOGY

The death list in our profession for the past year is a reminder that the older generation of practitioners is fast passing away. Dr. F. J. Duggan, one of the oldest practitioners, in length of practice, in the state had been in practice in the City of Grand Forks continuously for the past forty-two years.

Dr. S. H. Irwin had practiced in the same city for the past thirty-five years.

Dr. Paul Sorkness, one of the best known physicians in the state, located in Fargo in 1898, and had always devoted a large part of his time to the advancement of his profession and organization of the members.

Dr. F. H. Sturgeon, of Kulm, was at the time of his death President of the Southern District Medical Society.

Dr. Raymond W. Stough, of Beach, was well known in the western part of the state, where he had practiced for the past fifteen years.

Faithful to the last our deceased brothers were in the harness and engaged in active practice until the fatal illness that ended their labors. Firm in their beliefs of what was their duty to patients, they earned the respect of all by consistency in practicing as they believed.

The record of the deceased practitioners follows:

Dr. F. J. Duggan
Grand Forks, North Dakota

Born in Lloydtown, Ontario, September 4, 1850.

Died at Grand Forks, North Dakota, January 18, 1921.

Graduated University of Toronto, Canada, June 7, 1878.

Licensed in North Dakota August 1, 1885.

Practiced medicine in Grand Forks since 1879.

City Health Officer of Grand Forks for a number of years.

Member of Grand Forks District Medical Society.

Member of North Dakota State Medical Association, and of the A. M. A.

Dr. S. H. Irwin
Grand Forks, North Dakota

Born at Kitley, Ontario, September 3, 1859.

Died at Grand Forks, August 14, 1920.

Graduated from Trinity Medical College, Toronto, Ont., April, 1886.

Licensed in North Dakota August 7, 1866.

Served as County Physician in Grand Forks County for a number of years and until his death.

Member of County Draft Board.

Member of Grand Forks District Medical Society.

Member of North Dakota State Medical Association, and of the A. M. A.

Dr. Paul Sorkness
Fargo, North Dakota

Born in Eau Claire, Wis., October 17, 1867.

Graduated from the University of Minnesota Medical School, 1895.

Licensed to practice in North Dakota, 1898.

Practiced in the following places before coming to Fargo: Fisher, Minn.; Lake Park, Minn.; Moorehead, Minn.

Surgeon for the Milwaukee and Northern Pacific railroads from 1900 to 1920.

City Physician of Fargo from 1915 to 1919.

Member of State Board of Medical Examiners for eight years.

Received the degree of Fellow of the American College of Surgeons in November, 1913.

Past-President North Dakota State Medical Association.

Member North Dakota State Medical Association, and the A. M. A.

Died September 23, 1920.

Dr. Raymond W. Stough
Beach, North Dakota

Graduated from the University of Illinois, College of Medicine, Chicago, class of '05.

Practitioner of North Dakota for fifteen years.

Died at Bismarck Hospital September 12, 1920, after an illness of nine days, from Landry's paralysis following an infected abrasion of the bridge of the nose. The injury was received two weeks before the onset of paralysis.

Dr. Frank H. Sturgeon
Kulm, North Dakota

Born at Fairview, Pa., July 11, 1873.

Graduate of Hamline University Medical College, 1904.

Licensed in North Dakota, 1911.

Practiced at Evarts, S. D.; Logan, Mont.; Gackle, N. D.; Chaffe, N. D., and Kulm, N. D.

Died at Kulm, N. D., March 3, 1921, where he enjoyed a very extensive practice.

President of the Southern Dakota Medical Society since January, 1921.

Wife and child (daughter), one sister, and his parents survive him.

Member North Dakota State Medical Association, and of the A. M. A.

On motion by Dr. Charles MacLachlan, New Rockford, duly seconded, the report was accepted.

COMMITTEE ON MEDICAL DEFENSE

The Secretary read the report of the committee, as follows:

May 13, 1921.

North Dakota State Medical Association,
Fargo, North Dakota.

Gentlemen:—

Since my last report to you of June 10, 1920, with reference to the defence of malpractice cases handled by us for the Association, we beg to advise as follows:

The cases of Ella Springer vs. Chas. H. McDonnell and Lawrence Springer vs. Chas. H. McDonnell were tried at the January term of the District Court at Wahpeton. Two days before the date set for the trial, I suffered a fracture of the leg and was unable to attend, and Chas. J. Murphy, Esq., of Grand Forks, was engaged to defend the cases. The cases were tried for a week and resulted in a verdict for the doctors in both cases.

The case of Bart vs. Dr. A. Chernausek, of Dickenson, wherein J. W. Sturgeon represented the doctor. We have heard no more in regard to this case and do not know what disposition has been made.

The case of Betty Lind vs. Dr. A. L. Doe, of Bowbells. The settlement which was pending at the date of my last report has been finally consummated and the matter disposed of without expense to the Association.

The case of Putney vs. Dr. Johns, of Velva, is still pending in McHenry County. Insurance Company is defending.

Dr. John Dach, of Reeder, N. D., was sued in October, 1920 for malpractice in failing to properly reduce a fracture of the arm. The case was pending in Adams County at Hettinger, N. D., and was set for trial in January, 1921. Mr. F. M. Jackson, of Hettinger, represented Dr. Dach. On account of the distance from Minot and the difficulty and expense in going from Minot to Hettinger, we arranged with Mr. Jackson to represent us in the handling of the case. The case was continued from the January term and will come up for trial some time this summer. We will either take care of it ourselves or arrange with Mr. Jackson to do so. We may say, in passing, that the plaintiff took the deposition of Dr. Henderson, of Rochester, Minn., and we are informed that the deposition is very favorable to Dr. Dach, the defendant.

Dr. Henderson, who subsequently treated this arm, in answer to a hypothetical question, said that, considering the community in which the plaintiff and Dr. Dach lived and the condition of the man's arm, the doctor did what

the average doctor in such a community would be expected to do.

The case of malpractice vs. Drs. Pence & Pence, of Minot, for the improper reduction of a fractured arm, which was defended by the Fidelity & Casualty Co. of New York, was tried during the February term at Minot and resulted in a verdict for the plaintiff against the doctor for the sum of $5,000.00. This is fully covered by insurance.

Action commenced by Rosemary Whitty vs. Dr. H. L. Halvorsen, of Des Lacs, was handed to us for attention; and we prepared and filed an answer and have investigated the case to some extent and believe we will succeed in satisfying the plaintiff's attorney that there is no negligence in the case and get the case dismissed without expense to the Association. Dr. Halvorsen has no insurance. The case arises out of a fracture of a child's arm treated by Dr. Halvorsen. There was a dislocation and bruise, and some time after the operation, within about thirty days, there developed a numbness in the hand and fingers, and the child was brought to Minot for treatment. X-ray pictures were taken which showed the bones in perfect position and united. An operation was performed to cut away the callus which had formed about the nerve. Doctors here at Minot who saw the arm and the X-ray pictures, and the doctor who performed the operation, advised that there was no negligence on the part of Dr. Halvorsen.

The only expense that the Association has been put to during the past year has been the expense in connection with the Dr. McDonnell cases at Wahpeton amounting to $340.00.

Very respectfully submitted,
BOSARD & TWIFORD,
By R. H. Bosard.

On motion by Dr. P. H. Burton, Fargo, duly seconded, the report was accepted.

It was moved by Dr. Geo. M. Williamson, Grand Forks, that the next session of the House of Delegates be called to order at the close of the scientific session Thursday afternoon. Motion seconded and carried.

The House adjourned at 8:45.

SECOND SESSION, THURSDAY, MAY 26, 1921

The second session of the House of Delegates at 5:45 P.M., the President, Dr. Fred Ewing, presiding.

A quorum being present, the calling of the roll was omitted. The President announced that in the absence of one of the delegates from the Northwestern District Society, it had been suggested that Dr. A. J. McCannel be allowed to act in his place. There being no objection, it was so ordered.

Dr. J. P. Aylen, Fargo, Treasurer, presented his annual report, as follows:

TREASURER'S REPORT

Receipts

From Dr. Sihler, checking account	$2,078.70	
Savings account	1,678 40	
Interest to April 1, 1921	50.85	
From Dr. H. J. Rowe, Secretary, for dues	2,040.00	
Liberty Bonds	1,000.00	
Total		$6,847.95

Disbursements

Fifteen checks to cover warrants (No. 213 to 227, inclusive)	$2,590.25	
Balance		$4,257.70

Distribution

General Fund May, 1921 (cash balance)	$1,528.45	
Savings account to April 1, 1921	1,729.25	
Liberty Bonds (2) First National Bank	1,000.00	

REPORT OF COMMITTEE ON PUBLIC POLICY AND LEGISLATION

The only legislation that this Committee appeared in officially was the following:

House Bill No. 37 introduced by Mr. Slominski, which was as follows:

"An Act to Amend and Re-enact Section 466 of the Compiled Laws of North Dakota for the year 1913, relating to Preliminary Qualifications of Applicants for Licenses to Practice Medicine in the State of North Dakota, sought to change the year from 1912, the present law, to the year 1919, in which evidence of preliminary education necessary to admit applicants to the Junior or third year of the University of North Dakota or some equally reputable American College or University in addition to evidence of graduation and four year attendance, from a reputable medical college is required before applicants for license to practice medicine may appear before the State Board of Medical Examiners."

This bill was introduced for the benefit of one man who had graduated since 1912 and prior to 1919, who could not furnish the evidence of preliminary education required and consequently had been refused examination by the State Board of Medical Examiners.

The bill was accompanied by a petition with a long list of signers from Minot and surrounding country and also a letter which contained the qualifications of the applicant which consisted of "One year pre-medical work; graduate of University of Illinois, School of Medicine, Class A School as recognized by the American Medical Association; licensed by the state of Illinois, which reciprocates with the State of North Dakota; eighteen months service in St. Mary's Hospital, Chicago; captain in Medical Corps, U. S. Army in the World War; commanding officer of a 1,500-bed hospital in the A. E. F.; general practice in the City of Chicago before locating in North Dakota."

The reason cited for changing the law was that many of the most reputable medical colleges did not until very recently require such preliminary education, and as a result a large number of highly efficient doctors who graduated from some of the most reputable medical schools prior to 1917 or 1918 are being barred from taking the examination notwithstanding the fact that there is a well-recognized dearth of physicians in many localities in this State.

Your Committee, in conference with Senators Porter and Thoraldson, explained the unfairness of this bill to the medical students of the University of North Dakota for the past eight years. They have been required to take the standard premedical and medical courses, and, if this bill becomes a law, men who graduated before 1919 need not have this premedical training in order to practice.

It would be unfair to other men who have been denied the privilege of license in North Dakota between the years of 1912 and 1919 and would, no doubt, open up many of the cases that have been settled by the Board in the past few years.

If the law can be modified now to suit one individual case, it can be changed again at every session of the legislature. The law as it stands is a good one, recognized by the Federation of State Medical Examining Boards of the United States as one of the best in the Union, to make this change now would be taking a backward step.

The senators stated that qualifications presented with the petition and the sore need of a physician in that section had created such sentiment in the Senate for the passage of the bill, they did not feel that they could oppose it on the floor of the Senate, and that, unless some substitute amendment could be offered, it was bound to pass.

Dr. Smyth offered an amendment to the present law, that applicants who had served in the World War and had been honorably discharged from the service be permitted to appear before the State Board of Medical Examiners for examination and license. This amendment, offered as a substitute for the bill, was passed without further change in the present law.

Of two other bills of interest to the medical profession, but not acted on by the committee, one was to exempt all hospital property from taxation, provided the "hospital admitted to practice therein any regular licensed and practicing physician in the State," otherwise they would be put on the tax list and be required to pay taxes on assessed valuation of property and equipment. This bill was aimed at the so-called closed hospital staff, but rather overstepped its bounds, as it would force every hospital in the state to open its doors to every licensed practitioner to carry out any sort of medical or surgical treatment, no matter how inefficient he might be. If the hospital authorities offered any objection they would be penalized by being compelled to pay taxes. This bill passed the House, but was defeated in the Senate.

A bill to create a Board of Suggestive Therapeutic Examiners, and to practically extend all the privileges to individuals licensed by this board that are extended to regular licensed practitioners of medicine, was killed in the committee.

Respectfully submitted,

V. J. LaRose, M. D.
F. R. Smyth, M. D.
H. O. Altnow, M. D.

Dr. J. P. Aylen moved the adoption of the report as read. Motion seconded and carried.

COMMITTEE ON TUBERCULOSIS

Dr. James Grassick, Grand Forks, submitted the following report:

Your Committee on Tuberculosis beg to report that on reviewing the subject we are of the opinion that some very definite progress has been made during the past few years in its control. When we consider that less than forty years ago Dr. Koch discovered the tubercle bacillus; that the science of bacteriology has practically been written in the intervening period; that the life history of this particular organism and the pathological changes which it causes have only recently been reasonably well understood; and that many problems, such as paths of entry, modes of attack, preference for particular organs or tissues, immunization, etc., are far from being definitely settled, it is little wonder that we have not, as yet, been able fully to conquer this common enemy of our race.

When we further consider that leprosy, a near relative of tuberculosis, has so lately received a solar-plexus blow, we may confidently expect that some day not far distant a specific prophylactic or curative agent will be discovered that will mark the passing of the disease that has claimed its toll of death since history has been written.

In the meantime, however, we must be content to travel along the paths that experience and observation have found to be most helpful in its control. That these methods are effective and are getting results is evidenced by a study of the records published from time to time by the U. S. Bureau of the Census. In the Registration Area of the United States the death-rate for tuberculosis per 100,000 population in 1904 was 200, in 1910 it was 160.3, in 1917 it was 146.4, while in 1919 it was only 125.6, the lowest on record. Although no official figures are available it may safely be assumed that like results have been attained in our own state where the methods of attack have been used which have proved so effective elsewhere.

The Framington Demonstration is a concrete example of what intensive methods will do in lowering the death-rate from tuberculosis, as well as other preventable diseases. In this city of 16,000 population the tuberculosis death-rate in 1915 was 121.5, and after five years of intensive health work in which $2 00 per capita per annum was expended it was reduced to 64.5, practically cut in two.

A very promising feature of health work in state and nation is the general recognition that tuberculosis infection is most common among children and that by the early formation of correct habits of life with emphasis on nutrition, fresh air, rest, and elimination, much can be done to build up an immunity against tuberculosis. The Modern Health Crusade movement had this in view, and it has enrolled a great juvenile army of health seekers that are pledged to play the game. In North Dakota there are 60,000 Knights of the Double Barred Cross, 30,000 of whom by ten weeks' work have earned Squire Pins and 10,000 of whom by fifteen weeks' work have earned the title and insignia Knight Banneret. Knowledge is of value only as it is applied. The Modern Health Crusade seeks by the repeated performance of the health chores, so called, to form health habits that will be permanent.

Since our last meeting the Sanatorium at Dunseith has constantly been full and overflowing. The new Infirmary building is nearing completion, and when ready for occupancy will about double the present capacity. The superintendent reports approvingly that

more early diagnoses are being made than formerly, thus in due proportion increasing the number of arrests and cures.

The North Dakota Tuberculosis Association is still active and we believe doing more and better work than at any time in its history. Its workers report the sympathetic support of physicians, which is in keeping with the ideals of our profession. It has had under consideration the advisability of equipping a Travelling Clinic Car, accompanied by physician and nurse to go from place to place in those parts of the state where doctors are scarce, to work in conjunction with resident physicians where there are any and thus give to the people the health service that is so badly needed. Public Health Nurses, Welfare Agencies, Social and Economic Organizations, and the public in general are cooperating as never before for the common good.

Respectfully submitted,
J. Grassick, M. D.
Fannie Dunn Quain, M. D.
V. H. Stickney, M. D.
Committee.

On motion, duly seconded and carried, the report was adopted.

COMMITTEE ON MEDICAL EDUCATION

Dr. H. E. French, Grand Forks; presented the following report:

Your Committee on Education begs leave to report as follows:

The Committee has not met formally, but the Chairman has conferred with the other members orally and by letter.

The only matter in which the State Examining Board was also interested to come to the attention of the Committee during the year was the proposed change in the Medical Practice Act. The results of the efforts of the Board, the Committee, and others was a compromise.

The Chairman of the Committee attended the Annual Congress on Medical Education called by the Council on Medical Education of the American Medical Association in Chicago in March. Reports of the Congress have appeared in the Journal of the A. M. A.

For the School of Medicine at the University, it can be said that, soon after the meeting at Minot last year, the reports of an inspection made by Dr. Colwell of the Council on Medical Education and Dr. Lyon, representing the Association of American Medical Colleges, were made public. The school remains in Class A, and the reports are complimentary in many respects. Weaknesses, however, in the prime particulars of the numbers of instructors, amount of equipment, and room were pointed out very emphatically. The reports might, in fact, be considered a warning.

The Chairman of the Committee wrote many letters, spent two days in Bismarck during the session of the Legislature, and otherwise endeavored to assist in securing such appropriations for the University that the School of Medicine might be able to remain efficient and maintain its rating. Dr. Healy of the Committee also went to Bismarck in this connection, and many others gave assistance.

The appropriations made will permit of one building on the Campus that may indirectly give the School of Medicine more room. They will allow some strengthening of equipment and the addition of one man to the corps of instructors of the school for next year.

In addition it may be said that the number of students is increasing, being twenty-two and seventeen in the two classes, respectively, this year.

The Committee recommends that the Association, through its House of Delegates, go on record as favoring no future building of hospitals, by the state, such as a Childrens' Hospital, a Hospital for Crippled Children, a Psychopathic Hospital, and the like, until a careful survey of both the needs of the state and the needs of medical education in the state be met.

Respectfully submitted,
H. E. French, M. D.,
Chairman.

On motion by Dr. J. P. Aylen, duly seconded, the report was adopted.

COMMITTEE ON PUBLIC HEALTH

Dr. C. J. McGurren, Devils Lake, submitted the report of the committee, as follows:

Public Health activities in the state have for many years been accused, and justly so, of a colossal waste of energy due to independent groups working along particular health lines. This has in many instances brought about confusion and very often conflict among the various agencies. A few localities have been receiving overattention, while the larger territory suffered from lack of attention. The fault does not seem to lie with any one group, but it is due chiefly to lack of centralization and coordination of all health activities.

It is consequential that the most complete returns of vital statistics come from counties where they have a more perfect health organization.

In the early spring of 1920, a tentative working agreement was drawn up between the Secretary of the State Board of Health and the Northern Division of the American Red Cross, in order to unify the work of Public Health Nursing and provide therefor a supervisor. Two or three counties in the state had for several years previous, in their employ, a public health nurse, the success of whose work furnished a basis upon which more general activities might be estimated.

Under the law, which is more or less ambiguous and so designed that non-compliance is as feasible as to have it executed, many counties have taken advantage of its polemic nature and left it emphatically alone. However, a beginning was made under the new plan and rapid progress became apparent from the onset. From less than a dozen nurses employed when our work began, the report from our Supervisor, at the end of the year, showed twenty-eight public health nurses in the field, either affiliated with the Red Cross or employed independently by counties.

The birth and death reports that in any way approached a correct return are evident only in counties where nursing is carried on. In a purely agricultural state, such as we have, with life hazards reduced to the minimum, our death-rate should be something in excess of ten per thousand population. The counties that bear out this ratio are as follows: Adams, Burleigh, Cass, Grand Forks, Ramsey, Stutsman, and Ward.

The birth-rate should be somewhat in excess of twenty per thousand, which is true of the above-named coun-

ties, as well as the following additional counties: Barnes, Benson, Divide, Dunn, Emmons, Foster, Griggs, LaMoure, McIntosh, McKenzie, McLean, Mountrail, Nelson, Ransom, Sioux, and Steele.

In deaths we have gained in three counties since 1917 and in births we have gained in two.

This demonstrates the oft repeated contention that to get results, field activity is all-important. These counties named have field workers and those that fall below the ratio, in both births and deaths, have no such agency. What is the remedy? The law should be so framed to make it mandatory on the part of commissioners to employ at least one full-time public health nurse that all may reap the benefit of health protection now enjoyed by the few. The State Hotel Inspector should be transferred from the Food Department to that of Health, which would give the latter a useful agent in checking up local statistics.

No doubt, our dream for a full-time health officer will soon be realized, as the Health Department is now one hundred miles closer to Bismarck than it was two months ago. It is a big step in the right direction, and we await the time when this dream may become the reality.

Respectfully submitted,
C. J. McGurrin, M. D.,
Chairman.

The President appointed the following members to serve as a nominating committee: Dr. William C. Nichols, Fargo, chairman; Dr. H. W. F. Law, Grand Forks, and Dr. A. J. McCannel, Minot.

NEW BUSINESS

Dr. Blake Lancaster, Wahpeton, stated that, on account of meeting in the winter and the difficulty of all getting together at that time, members of the Richland County Medical Society were considering the question of adopting the method of electing county officers by proxy or by mail, and asked if this procedure might be legally carried out under the Constitution of the State Association.

Following discussion of the question and reference to Chapter 5, Section 1 of the Constitution, the President expressed the opinion that as a parlimentary rule it was up to the County Society to determine for itself whether or not it would vote by proxy or by mail.

Dr. Charles MacLachlan, New Rockford, moved that the ruling of the President in this matter be sustained by the House of Delegates. Motion duly seconded and carried.

On motion the House of Delegates adjourned, to meet at 8 o'clock Friday morning.

Third Session, Friday, May 27, 1921

The third session of the House of Delegates was called to order at 8 A. M., May 27, by the President.

REPORT OF NOMINATING COMMITTEE

Dr. W. C. Nichols, chairman, presented the following report:

For President—Dr. H. E. French, Grand Forks.

President-elect—Dr. E. P. Quain, Bismarck.

First Vice-President—Dr. W. C. Fawcett, Starkweather.

Second Vice-President—Dr. J. H. Rindlaub, Fargo.

Secretary—Dr. H. J. Rowe, Lisbon.

Treasurer—Dr. J. P. Aylen, Fargo.

COUNCILORS

Dr. Charles MacLachlan, New Rockford.
Dr. E. M. Ransom, Minot.
Dr. F. L. Wicks, Valley City.
Leroy G. Smith, Medina.

COMMITTEE ON MEDICAL EDUCATION

Dr. H. E. French, Grand Forks, 3 years.
Dr. H. H. Healy, Grand Forks, 3 years.
Dr. G. J. McIntosh, Devils Lake, 1 year.

COMMITTEE ON MEDICAL DEFENSE

Dr. Fred Ewing, Kenmare, 3 years.
Dr. C. N. Callander, Fargo, 3 years.
Dr. E. A. Pray, Valley City, 2 years.
Dr. H. O. Altnow, Mandan, 2 years.
Dr. R. W. Pence, Minot, 1 year.
Dr. H. W. F. Law, Grand Forks, 1 year.

RECOMMENDATIONS FOR STATE BOARD MEDICAL EXAMINERS

Dr. W. F. Sihler, Devils Lake.
Dr. Geo. M. Williamson, Grand Forks.
Dr. J. V. LaRose, Bismarck.

(Signed)
W. C. Nichols, M. D.
H. W. F. Law, M. D.
A. J. McCannel, M. D.

On motion, carried, the report of the Nominating Committee was adopted, and the Secretary was directed to cast the unanimous vote of the Association for the gentlemen named therein. The Secretary reported the ballot cast, and the officers were declared duly elected.

SELECTION OF MEETING PLACE

Dr. A. W. Guest, of Jamestown, on behalf of the Stutsman County Medical Society, extended an invitation to hold the 1922 meeting at Jamestown.

The Secretary read a letter from the Mandan Commercial Club inviting the meeting to be held in Mandan next year.

Dr. W. C. Fawcett moved that the Association accept the invitation to meet in Jamestown. Motion seconded and carried.

RESOLUTION

Dr. Charles MacLachlan introduced and moved the adoption of the following resolution:

Be It Resolved by the House of Delegates of the North Dakota State Medical Association, that, inasmuch as the medical fee bill of the State Workmen's Compensation Bureau does not cover each item of service for which a physician or surgeon may be called;

And Whereas there is a wide difference in the pecuniary responsibilities assumed by the doctor rendering such services according to the nature of the case, we would recommend that in fixing any fee for services in specific cases there should be taken into account the financial responsibility assumed by the operator; and we would further recommend that the Board, in fixing such fees, be guided largely by the advice of the medical adviser of said Board.

Motion to adopt the resolution was seconded and carried.

COMMITTEE ON MEDICAL HISTORY

Dr. James Grassick presented the historical report as follows:

At our last annual meeting your Committee on Medical History recommended that the work be continued along the lines heretofore approved by the Association. Feeling that it was the sense of your honorable body that this should be done, although no definite action was taken relative thereto, I have taken it upon myself to add bit by bit, as time permitted and opportunity offered, to the fascinating story of medicine on our prairies.

You may be interested in knowing what progress has been made and what ground has been covered. Devils Lake, Grand Forks, Richland, Southern, Sixth, Southwestern, Stark, Traill-Steele, and Tri-County Societies have furnished material that, with the exception of a few gaps which can be easily filled in, is reasonably complete; but from the other Societies I have been unable to secure anything with the exception of a few isolated incidents and biographies.

Unless the component Societies of our Association interest themselves to the extent of securing the historical data of their respective communities, with appropirate settings, our narrative will of necessity remain very imperfect and incomplete. I do not know of any service that a local society could render of more importance to themselves and to the profession as a whole than supervising the compilation of an authoritative outline of the evolution of medicine in their district, with an account of the lives of the physicians who shaped its course and the influence they exerted on the social and economic life of the people with whom they associated.

Material that is available today may be lost tomorrow. I would, therefore, strongly urge and recommend that during the coming year special efforts be made to secure from every section of the state a record of such medical facts as can be secured, with special emphasis on the work of the pioneers.

In addition to the foregoing something has been done along special lines. Chapters have been written covering the following topics:

North Dakota Medicine.
Territorial and State Boards of Health.
Specialties and Specialists.
Organization and Cooperation.
State Public Health Laboratory.
Tuberculosis Association.
The Old Army Doctor.
Notes of a 79-er by Dr. J. D. Taylor.
Lights and Shadows by Dr. J. E. Engstad.
The Pioneers of the Dakotas by Dr. V. H. Stickney.
Medical Standards of North Dakota by Dr. Geo. M. Williamson, and several others of like nature.

About one hundred and forty biographies of physicians, many of whom are now dead, have been sketched. Since our earliest physicians were our fort surgeons, guardians of the health of the Old Regular so fittingly and so feelingly memorialized by Hon. Lewis F. Crawford, of Sentinel Butte, special effort has been made to secure types of these interesting characters.

Fort Totten was taken as a setting as exhibiting the essential characters of the group. From records in the Surgeon General's Office, from naratives by early surgeons still living, from Government employees and from other outside sources a connected medical story of the Fort has been outlined from its establishment in 1867 together with many interesting sidelights on social and economic conditions.

Respectfully submitted,
J. GRASSICK, M. D.,
Chairman.

Upon motion, carried, the report was adopted.

The House adjourned to reconvene immediately after luncheon.

FOURTH SESSION, FRIDAY, MAY 27, 1921

The fourth session of the House of Delegates at 2:15 P. M., the President, Dr. Fred Ewing, presiding.

REPORT OF AUDITING COMMITTEE

Dr. F. R. Smyth, Bismarck, reported that the Auditing Committee had examined the Treasurer's books, receipts, and vouchers, and the report submitted to the House of Delegates Thursday, and found them correct.

Upon motion, carried, the report was accepted.

COMMITTEE ON INSURANCE

Dr. E. A. Pray, Valley City, chairman, submitted the report on insurance, as follows:

So far as the committee has been able to ascertain, the matter of insurance seems to be coming slowly. One company had given us a good rate on group insurance, but later they wrote a letter to the effect that they decided to drop the whole proposition, that the political situation in North Dakota was such that they had found they were not able to get justice in our courts, and therefore would not take any action at this time.

I have similar reports from some of the other companies.

In the present defense proposition there is a rise on the whole thing. Dr. Aylen tells me that some of the companies are charging us $75 for a $5,000 policy. The Aetna is lower than anybody else,—$23 on group insurance. That is the best that they can do, but the companies generally do not want this business; they are not even considering the matter, and I have been in correspondence with a number of them.

Your committee would suggest postponement of consideration of the insurance question, for the reason that we can not get a reasonable rate. There is a great increase in the cost of the insurance, and the prices that are quoted to us are too high. One company, on a fifty per cent basis, is offering to do the business for $35, where heretofore the rate has been $25. The Aetna Company offer to do it for $25 on a fifty per cent basis. We feel that this can hardly be done at this time, and our recommendation is that the matter be postponed.

Since my first report the Fidelity & Guaranty has made an offer of $19 on a ninety per cent basis, and $23 on a sixty per cent basis.

E. A. Pray, M. D.,
Chairman.

It was moved by Dr. H. J. Rowe that the report be adopted. Motion seconded by Dr. Charles MacLachlan.

President Ewing: I would like to see an effort to adopt this sort of insurance as supplementary to our present insurance, not stopping out state insurance, but making this insurance supplementary to the other. I am a firm believer in that kind of insurance, for it seems to me to be the only solution of the problem that is going to come in the near future. If we can get anything like decent improvement it will be no trouble to get in 50 per cent of our members. As a member of the Medical Defense Committee I would be willing to make an effort to do it. I wonder if it would not be possible for the defense committee to see if they can do that.

Dr. Pray: Personally I think something might be done, but the consesus of opinion of the committee was that the matter be suspended at this time.

The President: It seems to me this is the time we should act instead of postponing it, at least it would do no harm to make an effort to see if we could do that sort of thing.

Dr. Pray: The opposition is that the companies feel that they are willing to take on this thing at a higher rate if the membership joining it is sufficiently large, but the whole question rests on the proposition of getting a large number of men and sticking together and defending each other in the courts; otherwise they do not care to take it even at these rates.

The President: The facts are, that a very large percentage of the physicians of the state are carrying that insurance in some company. I think at least 50 per cent of the physicians are carrying that kind of insurance, and I believe a large percentage of those will be willing to go into a group insurance at the expiration of their present policy, and, as I understand it, they can go in at any time when their present policy lapses. I believe that the Defense Committee should make an effort to go through with this.

Dr. A. J. McCannel: I just wondered if anything of this kind could be done: Leave this matter in the hands of the Defense Committee or some other committee, and let them circulate an application or an agreement to take this particular kind of insurance; for instance, if I am carrying a policy in a company that is going to charge me $75, I know of no good reason why I should not change into an equally good company that will take it for $25. We might endorse this and make an agreement to go into it as a society. I wonder if we could leave that matter either to the Medical Defense Committee or to some other committee, the members of which would make it their business to get these applications and say to the insurance companies: We have these applications from men who will take them up as soon as their present policy expires.

In addition to that, I am very much in favor of keeping our medical defense in the Association, just for the moral effect that this would have. If enough of our members get into this we will stick together as has been said.

Dr. J. P. Aylen: There have been some suits brought in which certain members of this Association did not stick. I have been connected with a good many defense cases in the last few years, and sometimes I was surprised to find that certain men were giving testimony, and rather strong testimony, for the prosecution of these claims. The fact is that last year I was very much against continuing our present form of protection, looking upon it just as an extra expense. But I realize that it is going to be hard. With the present increase in the rates of old-line insurance of the standard companies, a great many men are going to leave these companies during the coming year, and many of them will shift to the Medical Protective, of Fort Wayne, Indiana. Some of the men from Minnesota were telling me yesterday that a good many of them were doing this down there. Now, if we drop our State

Association protection, we are going to leave a lot of men without any protection whatever and we are going to lose that bond that Dr. McCannel speaks of that keeps us together to some extent. There will be some fellows that will break away or that have committed themselves so badly that they cannot break away, and, consequently, through an accident, are obliged to give testimony which they would not like to give on second thought. But that is only a matter of education of a physician. Uuless some plan such as President Ewing mentions, is adopted, whereby the members are solicitied and we get 50 per cent or better signed up, I do not see how we can approach this thing in any other way. But I do not think it is going to be such an easy matter to gather up 50 per cent of the Association. Even supposing there are 90 per cent now, at the advanced rates, with our state protection in existence, it is not going to be very easy to obtain 50 per cent to sign up for this standard insurance. I realize that many men who are doing a lot of surgery or something that is apt to get them into trouble any day, feel that they cannot afford to do without it, no matter what the cost. But lots of the men in the country will say:—"There never has been such a thing as a malpractice suit in my district; everybody knows me, the people here are all friends of mine, and I am not in any danger, I will just keep that $75." And many of them are doing this to-day, more than you think, and this will show up with these threatened suits that we have in our State Association protection. We have defended quite a few suits here every year, and we find that those fellows have not had any other protection.

Dr. McCannel: I am asking for information for some of the others. In case I have a policy in the Aetna Life and I have carried it for five years, and I drop it—say it expires to-day, and six months from now I am sued for something that happened heretofore, would I still be protected?

The President: You are covered absolutely for the time of your policy.

Dr. Charles MacLachlan: It seems to me that we are on dangerous ground if we let go of our present insurance, just as matters are at this time. We discuss these questions in the House of Delegates, but members of the Association generally do not know of these cases that we discuss here and they do not know the prevalence of this evil of suit for malpractice. Therefore, I think that, in order to protect them, we should be very careful we do not do something here that will put them in a position they do not want to be placed in. It seems that at this time we have not got what we want—there is nothing that is satisfactory to us.

I have a suggestion to make. We talk about coöperation. Now here is a matter in which we might coöperate. It seems to me that we should look forward to grouping a number of states like North and South Dakota, Minnesota, and Montana, whose medical laws are much similar in the matter of protecting the people against practtioners who are not qualified; that is, we are pretty much placed on the same basis, pretty much have the same standard in the profession. Now, if our Defense Committee were requested to formulate some plan of an interstate coöperative organization which would include those four states, and they were asked to acquaint themselves with these different coöperative insurance plans that are in effect to-day, and are being suggested in other states, we might be able in another year to bring forth a plan which could be presented to the committee from each of the states mentioned, and include, not only our own members, but those of our sister states who have the same standing as we have in a medical way. I simply offer this as a suggestion that might be worked out. We would then bear our own insurance, and our committee having charge of this matter in each of the several states would take care of properly qualified attorneys for such defense purposes. Then, instead of being the North Dakota plan, it would be a northwestern plan, including a group of states. I offer this as a suggestion.

Dr. Aylen: That would be a good scheme providing the states were all populated alike, that is to say, if there were not any large cities. The number of these malpractice suits is greater in the large cities and correspondingly low in the villages, and we would have to bear a greater percentage of that risk than would Minnesota, for instance, with Minneapolis, St. Paul, Duluth, and other large cities. In North Dakota most of the population is rural, also that of South Dakota and Montana—those three states are pretty much on a par.

Last year I think we were to obtain a referendum vote from the societies, against the wishes of many of the doctors, on this very subject as outlined by Dr. MacLachlan; that is, as to whether they wanted to drop the old or take on the new.

THE PRESIDENT: This was, I think, taken up by the different societies, at least those I have visited, had taken some action to that effect.

To me the big thing is to have the insurance company get a competent corps of attorneys to make a proper defense. Unless you are going to have enough in it so the insurance company will secure the services of some real attorneys and put up a real defense, the defense is largely a joke. It seems to me that this is the big thing in getting a bunch of them together.

DR. W. C. FAWCETT: What Dr. MacLachlan says about the sister states is all right, but let us start our own state first. In order to get this thing before the meeting, I would move you that this proposition be further investigated by the secretaries of the different societies of the State Association and by the Medical Defense Committee, leaving it entirely with them, and then act, and preserve our present insurance.

Dr. MacLachlan seconded the motion.

DR. A. C. DEAN: If we get 50 per cent or more to carry this insurance, it strikes me that if we continue the old Medical Defense insurance in effect it will be a duplication, because the present policies most of us carry cover the defense as well as the damages that would accrue.

THE PRESIDENT: I think the feeling was that the medical society, by continuing their insurance, would get a moral effect in the proposition, and also take care of the fellow that was not insured otherwise. The idea is to have the doctors stand together. It would be an incentive to a man not to testify against a member.

DR. MCCANNEL: Referring to the action taken by the local societies, the Northwestern District Society was, I think, in the position Dr. MacLachlan mentioned—they did not have the information. So they met the point in this way: They instructed their delegates to vote to retain the present plan of medical defense until something better was offered, which I think covers just about what we should do here: Say nothing about the local medical defense. In answer to the question as to why we should keep it, we have had a few malpractice suits in the Northwestern District, possibly not as many as this district has had or some other districts have had. And I will say that we have one or two attorneys, so called, who, if they had the least encouragement, would have every doctor in the district sued once a week. Let me show to what extent they go in this: Drs. Durnin and McKay, of Bottineau, had a suit brought against them for about $25,000. A certain attorney of Minot, who damns the North Dakota Medical Defense up one side and down the other, went to one of our doctors and said: "Here, I want to use you as a witness in this case, and I will make it worth your while; I will give you ten per cent of the verdict." We all know that if he could get one doctor to go in on that he would be sure of a good verdict. Whatever the facts may be in other societies, I do not know of a doctor in our society that I would be afraid of if I were sued. Some of them might be compelled to testify. At the time this medical defense society was started, I personally and Dr. Quain labored with the men in our district to show them what they were doing to the State Medical Association, and they have seen the light, and I think in most of the districts they would see the light if the question were put up to them.

By the way, the lawyer I have referred to made the statement that he would not waste his time suing a man that did not have the insurance company back of him, stating that when he secures a judgment through the Supreme Court against a man that is insured he receives a check for it. In these cases the ordinary doctor is pretty hard to collect from anyway. He hasn't a word to say against the insurance companies because they are paying his bills, but he has no use for the medical defense.

The motion was carried.

On motion the House of Delegates adjourned sine dine.

H. J. ROWE,
Secretary.

PROCEEDINGS OF THE SCIENTIFIC SESSION

FIRST DAY, THURSDAY, MAY 26, 1921

The meeting was called to order by Dr. Fred Ewing, who read his presidential address, entitled, "The Family Physician: His Place in Modern Medicine."

Dr. Edward S. Judd, Rochester, Minn., read a paper on "Gall-bladder Surgery." The same was discussed by Dr. Geo. M. Williamson, Grand Forks; Dr. W. A. Dennis, St. Paul; and, in closing, by Dr. Judd.

Dr. S. Marx White, Minneapolis, read a paper on "Digitalis: Its Use and Abuse." This paper was discussed by Dr. F. I. Darrow, Fargo; Dr. E. L. Tuohy, Duluth, Minn.; and, in closing, by Dr. White.

Dr. Arnold Schwyzer, St. Paul, Minn., read a

paper on "Late Results in Stomach Surgery." The paper was discussed by Dr. W. G. Brown, Fargo; and Dr. E. S. Judd, Rochester, Minn.

Dr. E. M. Hammes, St. Paul, read a paper on "Cerebrospinal Syphilis." The paper was discussed by Dr. W. C. Nichols, Fargo; Dr. W. M. Hotchkiss, Jamestown; and Dr. Arthur Sweeney, St. Paul.

Dr. F. C. Rodda, Minneapolis, read a paper on "Surgery in the Abdomen in Infants from the Pediatric Standpoint." The paper was discussed by Dr. S. Oftedal, Fargo; Dr. H. B. Sweetser, Minneapolis; Dr. E. P, Quain, Bismarck; and, in closing, by Dr. Rodda.

Afternoon Session

The meeting was called to order by the President at 1 o'clock.

Dr. F. A. Bricker, Rochester, Minn., read a paper on "Focal Infection." The paper was discussed by Dr. H. W. F. Law, Grand Forks; Dr. E. L. Tuohy, Duluth; and, in closing, by Dr. Bricker.

Dr. E. P. Quain, Bismarck, read a paper on "Cancer Problems from the Surgical Standpoint." The paper was discussed by Dr. M. MacGregor, Fargo; Dr. S. Marx White, Minneapolis; Dr. A. S. Fleming, Minneapolis; and, in closing, by Dr. Brown.

Dr. H. J. Humpstone, Grand Forks, read a paper on "Clinical Psychology and Its Applications." The paper was discussed by Dr. Arthur Sweeney, St. Paul; and, in closing, by Dr. Humpstone.

Dr. Arthur T. Mann, Minneapolis, read a paper on "The Surgical Reflex Stomach." The paper was discusssed by Dr. R. E. Weible, Fargo; and by Dr. Mann.

Dr. R. C. Coffey, Portland, Oregon, read a paper on "Ptosis." The paper was discussed by Dr. N. Tronnes, Fargo.

Dr. W. A. Dennis, St. Paul, read a paper on "The Treatment of Ptosis." The paper was discussed by Dr. W. F. Sihler, Devils Lake; and Dr. E. P. Quain, Bismarck.

Dr. Carl Chatterton, St. Paul, read a paper on "Deformities of the Foot Caused by Anterior Poliomylitis, and the Usual Method of Mechanical Treatment," illustrated by motion pictures. The paper was discussed by Dr. C. N. Callander, Fargo.

Dr. J. B. Lewis, Minneapolis, gave an address on "Cosmetic Surgery," profusely illustrated by lantern-slides. Dr. John H. Rindlaub, Fargo, discussed the presentation.

Second Day, Friday, May 27, 1921

The meeting was called to order by President Ewing at 9:30 A. M.

Dr. Geo. A. Carpenter, Fargo, read a paper on "Malignant Diseases of the Rectum and Sigmoid," with a plea for an early diagnosis. The paper was discussed by Dr. W. A. Gerrish, Jamestown; Dr. E. P. Quain, Bismarck; Dr. H. B. Sweetser, Minneapolis; and, in closing, by Dr. Carpenter.

Dr. Robert Rizer, Minneapolis, presented a paper on "Hints for Diagnosis and Management of Gastric and Duodenal Ulcers." The paper was discussed by Dr. H. H. Bodenstab, Bisarmck; Dr. W. W. Wood, Jamestown; Dr. R. C. Coffey, Portland, Oregon; and, in closing, by Dr. Rizer.

Dr. H. B. Sweetser, Minneapolis, read a paper on "Radium vs. Surgery in Gynecology." The paper was discussed by Dr. V. J. LaRose, Bismarck; Dr. A. S. Fleming, Minneapolis; and, in closing, by Dr. Sweetser.

Dr. E. L. Tuhoy, Duluth, Minn., gave an address on "Mitral Stenosis," illustrated by lantern-slides. The subject was discussed by Dr. W. C. Fawcett, Starkweather; and, in closing, by Dr. Tuohy.

Dr. J. W. Bowen, Dickinson, read a paper on "The Value of Enterostomy for Relief of Illeus in Local and General Peritonitis." The paper was discussed by Dr. H. M. Ernfeld, Minot; and, in closing, by Dr. Bowen.

Dr. G. C. Woutat, Grand Forks, read a paper on "Stricture of the Ureters due to Focal Infection." The paper was discussed by Dr. V. J. LaRose, Bismarck; Dr. R. C. Coffey, Portland, Oregon; and, in closing, by Dr. Woutat.

Afternoon Session

The meeting was called to order by President Ewing at 3 o'clock.

The retiring President said: "In relinquishing the office of President I want to express a word of thanks to the members for the way in which they have stood behind the present administration, and especially to the committees for their efficient work."

On being inducted into office, President French said:

"I assure you that I appreciate the confidence that election to this office means, and I realize, too, that it means quite as much your interest in

the work I am engaged in, as well as confidence in the little School of Medicine at the University, which pleases me just as well as the personal side.

"This meeting has been the high-water mark for the medical society meetings of the state. It has been the greatest in attendance and the best in program. Let us see if we cannot keep the curve going right upward, let us plan to be at next year's meeting and see if we cannot make it hold up to at least the same plane. Then let us go home and push the idea of membership and get every man who ought to be a member into the Association, and this means all the men of the county societies."

Ambulant cases were then brought before the society for examination and discussion.

Adjourned.

H. E. Rowe, M. D.
Secretary.

PAESIDENT'S ADDRESS THE FAMILY PHYSICIAN: HIS PART IN MODERN MEDICINE

By Frederick E. Ewing, M. D.

KENMARE, NORTH DAKOTA

In the present period of financial depression and social unrest, especially marked in our own state, I find an increasingly large number of physicians who are thinking about living conditions rather than about scientific medicine; who are spending their spare time trying to collect their fees, instead of reading medical literature; who are hunting a new location, instead of a post-graduate school. Because of this feeling of restlessness and dissatisfaction, I have digressed from the more or less established custom of choosing a scientific subject for my address, and shall discuss, quite informally, some of the conditions and tendencies which have developed in our profession and suggest methods which should be employed both by the medical societies and the public in meeting these conditions.

In considering these questions we must constantly bear in mind, not only the welfare of the physician himself, but, more especially, the welfare of the public. Whatever we can do to better the condition of the physician we must do for the purpose of making him more efficient in his fight against disease. The spirit of service always has been, and always will be, our ruling motif, and in that spirit I wish to discuss this subject; and I wish to speak from the standpoint of the family physician, for, in spite of present tendencies to specialize, the family physician still is, and always will be, more important than all the specialists combined in our fight against disease. A very large majority of folk will live and die under his care alone—without consulting a specialist of any sort. In other words, he is the most important man in our profession, and any effort to improve the profession must begin with the family physician.

In order to understand better present conditions, let us review, very briefly, the stage through which our profession has developed. I do not mean to go back to the mysteries, superstitions, and religious fanaticisms of ancient history, nor to discuss the heroic personalities who made possible modern medicine, but, rather, to sketch what has happened in the last generation or two since the practice of medicine became a science.

Two generations ago every physician was a family physician. His income, though not large, was as good as or better than the income of his associates in business or professions. He was a unique figure in his community—kind, gentle, dignified, honored and loved by all. His medical education consisted of two to three short courses of lectures, and was inexpensive. But during this time our knowledge of medicine was increasing by leaps and bounds. Every year brought some new important discovery. The exact cause of many diseases became known. Surgery developed. Hospitals were founded. The trained nurse began to take the place she has to-day. Methods of treatment became more specific, more elaborate, more effective. Medicine became a much more exact science than it had been before. What did all this mean to the physician? In the first place it increased his efficiency and usefulness; in the second place it meant a much longer period of preparation. Every new discovery meant that the student had that much more to learn, and so the medical

schools lengthened their courses of study from two years of six months each to four years of nine months each. Then they required two years of preliminary education after a high-school course, and now have added a fifth year as hospital interne, so that now the minimum requirement is seven years. This means not only seven years of hard work, but also an outlay of from five to ten thousand dollars. I speak of this long period of training and its expense, not because I think it unnecessary,—for we all know that even the seven years is short enough in which to lay the foundation for the practice of modern medicine,—but because I believe economic problems are the cause of some unsatisfactory conditions and tendencies in our profession to-day. What are these, and what do they portend?

First and most important is the drift away from general practice into the specialties. This has come about largely because of social and economic conditions. The specialties were developed originally because special knowledge was required to practice them,—something more in the way of training than was given in the regular medical course,—and because of this special training the fees charged were higher. The specialist's work took him away from the disagreeable part of the practice of medicine, such as long, irregular hours and night calls, so that the profession began to understand, not only that the specialist had the easiest job, but that he was getting much the best pay for it. The public began to regard the specialist as a man of unusual ability. The mere fact that he stood in the community as a specialist meant to the average man that the specialist was a man of superior quality. This was especially true of the surgeon, for surgery has always had a dramatic appeal. This natural feeling on the part of the public was often fostered by the physician doing the special work, until to-day the public thinks of our profession as consisting of two groups,—the common country doctors and the specialists. This feeling reflects on the standing of the family physician in the community. Not only that, but it injures him financially, for the people are willing to pay a specialist a reasonable fee, but they are not willing or they neglect to pay the family physician. A community will take up a collection to pay a surgeon's bill for some poor family, but did you ever hear of them doing that to pay the bill of the family physician? And what is the result? The younger men are not going into general practice as freely as they did, and many older men are quitting their jobs as family physicians and crowding into the specialties. They are tired of taking all the hardships and getting little of the rewards.

This movement has been disastrous in rural communities. Thousands of country towns where there have been physicians are now without a doctor. This condition has become very acute since the war, for before the war many doctors were looking for a change of location and only waiting for the chance, so did not return to their former locations. In New England, according to an article in a reliable magazine, over half the towns are without physicians. In South Dakota, Montana, Canada, Minnesota, the same conditions exist. The University of Minnesota has had so many calls for physicians that they are considering some sort of a group clinic in rural districts to take care of their needs. In our own state the conditions are bad. I know of one county-seat where three physicians were located ten years ago that has none now, and they have for a year been offering a thousand dollars bonus for a man to come in, and they have not succeeded in getting one. Many towns are twenty to forty miles from a doctor, which means that it is impossible to get medical service during the winter. This means that a great many lives are lost every year because of the lack of medical care. In our own hospital we have noticed an alarming increase in the number of badly neglected cases admitted. Twice within a year patients died on the way to the hospital, and several times within a few hours of their admission, and it has not been that the attending physician was negligent, but because they had none. When a score of needless deaths occur in one district during a year, as has been true of the rural districts of this state because medical aid was not available, the condition becomes desperate. In short, we are to-day facing the fact that there is a shortage of physicians, especially family physicians, and that in many localities adequate aid is impossible under present conditions. Two factors have brought this about: first, medical education has become so long and expensive that fewer men are entering the profession, and, secondly, because many family physicians were not making a living, or were making a very poor one, in general practice and have gone into the specialties.

What can be done to better conditions? The specialties are crowded. How can we make general practice more attractive? In our medi-

cal schools I believe there should be some successful country doctors on the faculty,—men who can teach the student how to make a success of a country practice. The place of the general practitioner and his importance in the profession should be emphasized. All our students graduate to-day with the idea of being specialists. If they go into general practice it is only as a makeshift to get a little money and not as a life-work. They should be taught to charge adequately for their work and to collect their fees. They should be taught that it takes more knowledge, more skill, more brains, to do general practice, where they see and must care for every ailment, than to practice some limited specialty and know nothing about the rest. The general practitioner should become the honored man of the profession.

Not only in our medical schools, but also in our medical societies, should the family physician take the leading part. Too often we fill the offices of our societies with men who are doing special work, especially surgeons. This should not be; we should put men in who represent the majority of our profession, that is family physicians.

A very great deal can be done by the specialist who is called in consultation with the general practitioner, or who sees a case which has run away from the family doctor to see him. I believe a very large part of the jealousies that spring up between general practitioners and specialists could be avoided if the specialists would take pains to be fair and square with the man who has handled the case before. Too often, consciously or unconsciously, the specialist assumes the air of superior knowledge, or passes some little disparaging remark, which looms large in the mind of the patient and his friends; or sometimes he says more by his silence than he could say with words. I insist this is not fair and is very detrimental to the whole profession. As a rule it is unintentional, but none the less harmful for that reason. The consultant must make it his business to be just and fair with the home doctor, and all too frequently the family doctor who has studied the case for weeks is right, instead of the consultant. The specialist would look foolish trying to perform the many duties the general practitioner is called upon to do. Not only that, but the consultant can better serve his patient by working in harmony with the home physician, who is on the job all the time, and that should always be our first consideration.

To the consultant I would say, "Don't underrate the home doctor. It would astound you if you knew how many times he has handled the case better than you. Cultivate his friendship, learn from him, tell his patient how well he does his work."

You will be a success only as you learn to coöperate, and it is sometimes an art. I insist that the family physician is doing his work as well or better than the specialist is doing his, and that the best interests of the public can be served only by the close coöperation of all. There is no place for jealousies or mud-slinging in our profession. Only a few quacks and shysters get into the profession, and they should be ignored.

I repeat, the consultant can and should do more to help the family physician than anyone else.

Something must be done to make general practice—especially country practice—more profitable, or we shall soon be without country doctors. In the first place the country doctor must be taught to charge adequate fees for his work, and to collect them. The consultant must constantly emphasize the importance of the general practitioner and insist that he is paid adequate fees. The fees paid surgeons and other specialists are out of proportion to those paid general practitioners. I do not believe they are too high, but that the general practitioner gets too little for his work, especially surgical and other conditions in which the case is referred to a specialist. It takes as much, and sometimes more, skill to diagnose these conditions and get the patients to a specialist at once, than it does to perform the operation; and yet the general practitioner's fee is a very small fraction of the fee charged by the specialist, and this is not right. I do not believe it is wise to adopt a general system of division of fees, but I do believe the time is soon coming when the family physician will charge and he paid an adequate fee for his part in handling these acute surgical conditions, and it will be many times the fee charged at present. The public will learn that the successful management of many acute surgical conditions depends upon the accuracy and speed with which they are diagnosed by the home doctor, and, when the patients learn that, they will be willing to pay for it.

If the rural communities want to keep doctors they must learn to pay doctors' bills just as they would a note at the bank. I cannot emphasize this too much. Most doctors are leaving general

practice because their bills are not paid. If there are people too poor to pay for medical service, the public should pay for it. And I do not mean that medicine should be socialized—no worse system could be devised than that. However, we must face the fact that the public is beginning to believe that socializing our profession is the best way to get adequate service. Such bills have been before most of our state legislatures the past year, and unless we find some way of giving adequate medical care to the rural communities, I believe the next decade will see a bitter fight to prevent a socialized medical profession. Instead of socializing medicine, the small community should meet its needs by subsidizing the doctor, either directly or indirectly or by providing for him a small office, with a nurse and a few hospital beds, so that he has a place in which to work. They should have him charge adequate fees and the public should take care of the bills of those who cannot pay. Then the doctor could afford to practice there and would be only too glad to do so.

In the recent past the trend has been away from general practice into specialties and, into large centers, but I believe, the time is soon coming when the family physician will again take his rightful place in our profession. Already the specialists are leaving the large centers and forming small centers where they practice in groups, and, I believe, this is the best for the physician and indefinitely best for the public. It means the establishment of a small but thoroughly equipped hospital in every small center where a group of men can give the best of service. Dr. Billings was recently quoted as saying that there should be a small, well-equipped hospital in every county, and there is no doubt that the tendency is that way.

In the Army Medical Corps it was found that more and more work must be done near the front if it was to be effective, and so it is in private work. We find a large percentage of acute cases that can be saved only by immediate surgical interference, and this must be done in the small hospital. This condition has been brought about by force of circumstances. An increasingly large percentage of the surgical work is being done in small hospitals, and the work in these institutions has improved so that it is equal in quality to that done in larger places. Many of the best young men are going into the small centers where, with a small, well-equipped hospital, they form groups which are doing the very highest class of work. This movement is well under way, and it will continue to develop, as it should, for it means the best service to the public.

I believe the time will soon come when there will be not only a group associated with the small hospital, but also that there will be associated with this group, and financially interested in it, a large percentage of the general practitioners of that community, all working in close harmony for the welfare of the public. This will help solve the problem of the general practitioner. He will be a part of the group, and not outside of it, as he is to-day. These groups, in turn will work in harmony with the large centers. and research laboratories, as they should. This may seem idealisitc, but I believe the trend is that way.

We must remember that the family physician is the important man in our fight against disease, just as the doughboy was in the army. We will succeed only as he succeeds. He holds the front trench, and the pressure of economic conditions must not drive him out. As with the doughboy —no more honorable, nor requiring more superior qualities. If the story of the pioneer doctors of our own state (country doctors all) were told, it would be the story of dauntless courage, infinite sacrifice, and heroic achievement.

Within the sacred walls of Westminister, beside her famous heroes, England has buried an unknown soldier of the World War. Thus to the common soldier—the unknown dead—she pays her highest tribute of honor; and so it seems to me, beside Lister, Pasteur, and Murphy, great epoch-making men, will be placed the family physician, the doughboy of our profession, unknown to the world at large, but fighting the grim battle against disease with a courage undaunted and a heroism unsurpassed.

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Timm, J. F.....Makoti
Tyrell, J. B.....Underwood
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De Puy, R. G.....Jamestown
De Puy, T. L.....Jamestown
Eaton, R. G. ..... Jamestown
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Gerrish, W. A. ..... Jamestown
Golseth, G. .....Jamestown
Guest, A. W.....Jamestown
Holt, G. H. ..... Jamestown
Hotchkiss, W. M. ..... Fargo
Longstreth, W. E.....Kensal
Melzer, S. W.....Woodworth
Movius, A. H.....Jamestown
Nolte, W. C.....Jamestown
Norriss, H. R.....Sharon
Peake, Francis .... Jamestown
Shepard, G. P. .... Jamestown
Smith, Le Roy G.....Medina
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Wink, Helen K.....Jamestown
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Gaebe E. C. ..... Harvey
Goss, E. L.....Carrington
MacKenzie, J. Ross...Carrington
MacKenzie, J. Roy, New Rockford
MacLachlan, Chas..New Rockford
McClusky, O. W.....Carrington
Matthaei, D. W.....Fessenden
Meadows, R. W.....Sheyenne
Owen, W. R. ..... Oaks
Owenson, H. A.....Grace City
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Swartout, E. F.....Sykeston
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Altnow, H. O.....Mandan
Anderson, C. O.....Willow City
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Arnson, J. O.....Bismarck
Arneson, A. O.....McVille
Arzt, P. G.....Jamestown
Awty, Wm.....Fargo
Aylen, J. P.....Fargo
Backus, A. S. ..... Wales
Baer, DeWitt .....Braddock
Bailey, Fred H.....Fargo
Baillie, W. F.....Hunter

Bakke, Hans .....Lisbon
Baldwin, Wm. P.....Fargo
Barrette, J. H.....Driscoll
Barton, W. C. .. Anadarko, Okla.
Bean, O. G.....Walcott
Beek, R. H. .....Lakota
Beeson, H. B. ..... Forman
Bennett, C. E.....Aneta
Benson, O. T.....Glen Ullin
Benson, R. D.....Hannaford
Bodenstab, W. H.....Bismarck
Bowen, J. W.....Dickinson
Boyum, P. A.....Harvey
Bradley, W. C. ..... Marion
Brandes, H. A.....Bismarck
Brandt, A. M.....Bismarck
Brenckle, J. F. ..... Kulm
Briggs, F. W. .... Duluth, Minn.
Brigham, F. O.....Stanley
Brimi, C. L.....Cooperstown
Brown, D. F.....McClusky
Brown, W. G.....Fargo
Brugman, F. A.....Minot
Bunting, F. E.....Mandan
Burrows, F. N.....Bathgate
Burton, P. H.....Fargo
Buzzell, C. P.....Cleveland
Cain, W. T.....Underwood
Callander, C. N. ..... Fargo
Callestrom, G. W...Northwood
Campbell, C. C.....Ashley
Campbell, Robt. D.Grand Forks
Carpenter, Geo. A.....Fargo
Carr, Andrew.....Minot
Carr, Andy M. ..... Minot
Carter, J. A.....Warwick
Chernausek, Sam.....Dickinson
Christie, J. F. ..... Burlington
Christensen, W. .....Lidgerwood
Clark, Horace.....Wheatland
Clark, I. D.....Harvey
Clark, S. B.....Buffalo
Claybough, W. R.....Grenora
Clay, A. J. ..... Fargo
Coffin, H. H.....Drake
Constance, G. M....Donnybrook
Countryman, J. E.....Grafton
Cooperman, H. O.....Minto
Cowan, C. C. .... Jamestown
Craise, O. S.....Towner
Critchfield, L. R. .... Kenmare
Crawford, John..New Rockford
Crossette, G. D.....Richardton
Culbert, M. H.....Courtenay
Cuthbert, W. H.....Hillsboro
Dach, J. L. ..... Reeder
Darrow, F. I.....Fargo
Darrow, Kent E.....Fargo
Davis, H. A.....Dickinson
Dean, A. C.....Grand Forks
Deason, F. W.....St. Thomas
De Puy, R. G.....Jamestown
De Puy, T. L.....Jamestown
Devine, J. L.....Minot
Dixon, O. C. ..... Fairdale
Dochterman, L. B. .... Williston
Donker, A. E.. .....Sykeston
Durkee, C. A.....Abercombie
Durnin, G. A.....Bottineau
Durnin, Charles.....Westhope
Drew, G. F. ..... Devils Lake
Eastmas, L. G.....Hazen
Eaton, R. G. ..... Jamestown
Earl, H. D. ..... Jamestown
Eggers, Aug.....Grand Forks
Emert, H. F.....Sarles
Engesather, A. D.....Brockett
Engstad, J. E.....Grand Forks
Erenfeld, H. M.....Minot
Evans, R. M. ..... Minto
Ewbank, J. Nelson.... ...Rhame
Ewing, Fred.....Kenmare
Ewing, John.....Kenmare
Fawcett, W. C.....Starkweather
Ferguson, F. W. Starkweather
Field, A. B.....Forest River
Fisher, A. M.....Bismarck
Fisher, Stephen.....New Salem
Fisk, D. A.....Kenmare
Flath, Milford G.....Stanley
Flaten, A. P.....Grand Forks
Floew, A. T.....Harvey
Forbes, C. G.....Washburn
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Fortun, Olaf.....Grand Forks
French, H. E. ..... Grand Forks
Friesen, H. J.....Grand Forks
Frogner, G. S.....Mayville
Fuller, J. D. ..... Plaza
Gaebe E. C. ..... Harvey
Galbraith, J. E.....Cavalier
Gerrish, W. A.....Jamestown
Gislason, G. J.....Grand Forks
Glaspel, C. J. ..... Grafton
Glaspel, G. W. ..... Grafton
Glascock, Jas. .... Grand Forks
Glasscock, T. J.....Finley
Golseth, G. .....Jamestown
Gordon, W. L.....Washburn
Goss, E. L.....Carrington
Gowenlock, H. J.....Gardner
Grace, J. B. ..... Zeeland
Grangaard, H. O.....Douglas
Grassick, Jas.....Grand Forks
Greene, L. B.....Edgeley
Greene, E. E. ..... Westhope
Greenman, N. H.....Fairmont
Griebenow, F. F.....Bismarck
Crosby, C. E.....Oriska
Griffin, J. H.....Ryder
Gronvold, A. C. ... Fort Ransom
Gronvold, F. O.....Fargo
Guest, A. W.....Jamestown
Gunderman, H. R.....Monango
Gustuson, E. V.....Fargo
Haagenson, E. C...Grand Forks
Hagen, E. J.....Williston
Halgren, J. A.....Bismarck
Halldorson,M.B..Winnipeg,Can.
Halverson, H. L.....Des Lacs
Hamilton, J. S. ..... Bathgate
Hamilton, E. E.....New Leipzig
Hancock, E. W.....Carpio
Hanna, J. F.....Fargo
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Harris, C. B.....Pembina
Hayhurst, J. O. ..... Rolette
Healy, H. H.....Grand Forks
Heimark, A. J.....Finley
Heimark, J. J. ..... Fargo
Heinzeroth, G. E.....Turtle Lake
Hendrickson, Gilbert..Enderlin
Hjelle, C. A.....Clifford
Hoff G. C.....Tower City
Hofman, P. E.....Fargo
Holt, G. H. ..... Jamestown
Horsman, A. T.....Devils Lake
Hotchkiss, W. M. ..... Fargo
Hougen, Hans .....Fargo
Hubbard, F. G.....Cogswell
Huntley, H. B.....Leonard
Irby, M. R. Williamstown, N. J.
Irvine, V. S. ..... Lankin
Ivers, M. U.....Christine
Jackman, J. C.....Minot
Jacobs, G. C.....Wahpeton
James, J. B.....Page
Jelstrup, Christian....Petersburg
Johns. S. M.....Velva
Johnson, P.O. C. Watford City
Johnson, J. A.....Bottineau
Joistad, A. H.....Fargo
Jones, C. S. ..... Williston
Jones, W. D.....Devils Lake
Kellogg, P. M. ..... Rogers
Kermott, L. H.....Minot
Kerner, C. A.....Tuttle
King, C. J.....Columbus
King, Z. P.....Tolley
Kjelland, A. A.....Hatton
Knapp, H. G.....Minot
Knutson, O. A.....Buxton
Kolb, F. K.....Granville
Lamont, J. G.....Dunseith
Lang, Francis F. .... Lansford
Lancaster, Blake ....Wahpeton
Lancaster, W. M.....Wahpeton
Landry, L. H.....Walhalla
Lang, A. A. J.....Sanborn
Larson, G. A. ..... Fargo
Larabee, S. G. ..... Mandan
LaRose, V. J.....Bismarck
Law, H. W. F.....Grand Forks
Leatherwood, T. F. .....
..... Memphis, Tenn.
Leedahl, O. S. ..... Stanley
LeBien, E. A.....McHenry
Lemieux, Darie ..... Leeds
Lewis, T. H.....Sutton
Limberg, A. M.....Fargo
Link, J. J. ..... McVille
Lipp, G. R.....Bismarck
Little, R. C.....Mayville
Lodge, F. B.....Steele
Lohnbauer, E.....Lakota
Lommen, C. E.....Fordville
Long, W. H. Rochester, Minn.
Long, A. G. ..... University
Longstreth, W. E.....Kensal
Lyle, W. D.....Havana
MacDonald, A. C.....Valley City
MacDonald, A. W.....Valley City
MacGregor, Murdock.....Fargo

MacKenzie, J. Ross...Carrington
MacKenzie, J. Roy, New Rockford
MacLachlan, Chas..New Rockford
MacLachlan, F. M.....Bismarck
McCannel, Archie D.....Minot
McCannel, A. J.....Minot
McClusky, O. W.....Carrington
McDonnell, R. H.....Hankinson
McGurren, C. J.....Devils Lake
McIntosh, G. J.....Devils Lake
McLean, R. M.....Gilby
McMurtry, W. C.....Lisbon
McQueen, W. W.....Langdon
Maercklein, C. J. ..... Beach
Maercklein, F. W.....Oakes
Marsden, C. S.....Grand Forks
Martin, Thomas P.....Mayville
Matthaei, D. W.....Fessenden
Meadows, R. W.....Sheyenne
Melzer, S. W.....Woodworth
Miller, H. W.....Casselton
Miller, J. P.....Grand Forks
Moeller, Thor .....Devils Lake
Moffatt, George .....Crosby
Monteith, George .....Hazelton
Moore, W. H. .... Valley City
Moore, D. ..... Fargo
Moore, J. H. ..... Grand Forks
Moreland, J. W.....Maxbass
Morris, A. C.....Fargo
Movius, A. H.....Jamestown
Mulligan, T.....Grand Forks
Mulligan, T. C. .. Grand Forks
Murray, K. M. ..... Scranton
Murray, K. M.....Scranton
Munier, H. J.....Oakes
Nachtwey, A. P.....Dickinson
Nelson, W. P.....Knox
Nesse, S. A.....Nome
Nestos, P. A.....Minot
Newlove, J. T.....Minot
Nichols, A. A.....Fargo
Nicholson, A. S.....Williston
Nicholson, E. G.....Lawton
Nichols, Wm. C.....Fargo
Nickerson, B. S.....Mandan
Nolte, W. C.....Jamestown
Norriss, H. R. ..... Sharon
O'Brien, T.....Wahpeton
O'Keefe, Henry.....Grand Forks
Oftedahl, Arne.....Fargo
Oftedal, Axel .....Fargo
Oftedal, Sverre.....Fargo
Oftedal, Trygve ..... Fargo
Olson, C. T.....Lidgerwood
Opstedal, J. A. .....
..... Chippewa Falls, Wis.
Orcutt, A. H. ..... Kenmare
Ostrander, A. J.....Enderlin
Owen, W. R. ..... Oaks
Owenson, H. A.....Grace City
Panek, A. T. ..... Milton
Parker, L. V. ..... Minot
Parker, R. M. ..... Portal
Patterson, T. C.....Lisbon
Paxman, D. G.....Cavalier
Peake, F. Margaret.....
..... Grand Forks
Peake, Francis .... Jamestown
Pence, R. W.....Minot
Perkins, Geo. A.....Dickinson
Peterson, O. T.....Northwood
Plane, J. F.....Edgeley
Platou, L. S.....Fargo
Platou, L.....Litchville
Plassman, W. F. Golden Valley
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Pray, E. A.....Valley City
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Quain, Fannie D.....Bismarck
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Ransom, E. M.....Minot
Ray, R. H.....Garrison
Reedy, P. G. ..... Arthur
Ribble, George B.....La Moure
Rice, C. P. ..... Wahpeton
Rigler, Leo.....New England
Rindlaub, Elizabeth P.....Fargo
Rindlaub, John H.....Fargo
Rindlaub, M. P.....Fargo
Ripperton, Sherman...Wyndmere
Ritchie, C. K.....Velva
Roan, M. W.....Bismarck
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Robinson, C. O.....Bismarck
Robertson, C. W. Park River
Rogers, Joseph .....Alexander
Rollefson, C. O.....Ambrose
Rothnem, T. P.....Fargo
Rowe, H. J.....Lisbon
Ruediger, E. H.....Bismarck
Ruud, M. B. .... Grand Forks
Ryan, D. E.....Hankinson
Sand, Olaf .....Fargo
Sasse, E. G.....Lidgerwood
Savre, M. T. .....Northwood
Schierbaum, A. F. E. .... Beach
Schipfer, L. A.....Bismarck
Schierbaum, A. F. E. .... Beach
Schneider, J. E.....Bowman
Schumacher, William...Hettinger
Scott, R. A.....Crystal
Shepard, G. P. .... Jamestown
Shortridge, W. R.....Flasher
Short, P. E. ..... Adams
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Sihler, W. F.....Devils Lake
Simon, John ..... Napoleon
Skelsey, A. W.....Fargo
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Smith, Clinton.....Devils Lake
Smith, J. A.....Noonan
Smith, J. C.....Thompson
Smith, C. C. ..... Beulah
Smith, Le Roy G.....Medina
Smith, Oscar M.....Killdeer
Smyth, F. R.....Bismarck
Somers, A. J. .....
..... Chippewa Falls, Wis.
Somers, A. L. .....
Chippewa Falls, Wis.
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Stone, E. C.....Balfour
Strauss, F. B.....Bismarck
Stromberg, G. E.....Langdon
Stucke, Agnes G.....Garrison
Stucke, E. C.....Garrison
Suter, J. C.....Grafton
Swartout, E. F.....Sykeston
Swenson, A. W.....Bisbee
Taylor, J. D.....Grand Forks
Thelan, W. P.....Wilton
Thompson, A. Y.....Larimore
Thompson, R. C.....Wilton
Timm, J. F.....Makoti
Tompkins, C. R.....Oberon
Trainor, M. E.....Williston
Tronnes, N. .....Fargo
Truscott, J. R.....Binford
Tyrell, J. B.....Underwood
Van de Erve, H.....Carrington
Van Houten, J.....Valley City
Verrett, B. D.....Rolla
Vigeland, J. G.....Brinsmade
Vinje, Syver .....Hillsboro
Waas, Chas.....Neche
Wadel, K. A.....Portland
Wagar, W. D.....Michigan
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Westeen, A. A.....Grand Forks
Westervelt, A. E. .... Bowden
Weyrens, R. E.....Sheldon
Wheeler, H. M.....Grand Forks
Wheelon, F. E.....Minot
Whittemore, Arthur A..Bowman
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Wicks, F. L.....Valley City
Wiig, I. C. J.....Wahpeton
Williamson, Geo. M.Grand Forks
Windel, H. C. ..... Williston
Wilson, W. C.....Grand Forks
Winchester, H. E.....Hazelton
Wink, Helen K.....Jamestown
Witherstine, W. H...Grand Forks
Wolverton, W. C.....Linton
Wood, W. W.....Jamestown
Woodward, F. O. .. Jamestown
Woutat, H. G.....Grand Forks
Wylie, A. R. T.....Grafton
Zimmerman, S. A....Valley City

NEWS ITEMS

Dr. Frank Whitmore, of St. Paul, was married last week to Miss Louise Bishop, also of St. Paul.

Dr. F. H. Dubbe, of New Ulm, was married last month to Miss Lillian Steinke, of Minneapolis.

Dr. James Hayes, recently a Fellow in Surgery in the Mayo Foundation, has opened an office in the LaSalle Building, Minneapolis.

Dr. Stanley H. Haynes, of Minneapolis, died last week at the age of 28. He was a graduate of Rush, Class of '19, and had worked with Dr. George W. Crile, of Cleveland.

At the annual meeting of the Minnesota State Medical Association in Duluth next week (August 25 and 26) methods of fighting the influenza will be given special attention. Other every-day medical problems will be emphasized.

Dr. D. W. Craig, of Sioux Falls, S. D., has gone to France as a delegate of the South Dakota Department of the American Legion. About two hundred delegates go from this country, and while in France they will be the guests of the French Government.

Dr. W. P. Baldwin, of Fargo, N. D., has purchased the practice and residence of Dr. J. A. Roy, of Stephen, (Minn.) Dr. Roy returns to Argyle, where he formerly practiced. Dr. Baldwin is a graduate of the University of Minnesota Medical School, class of '01.

The Governor of North Dakota has appointed the following physicians members of the State Borad of Medical Examiners for three years: Dr. V. J. La Rose, Bismarck; Dr. W. F. Sihler, Devils Lake; and Dr. T. L. De Puy, Jamestown. Two of the three were suggested by the State Medical Association at its annual meeting in May.

The Southern District Medical Society of South Dakota, held its annual meeting in Oakes last month, when the following officers were elected: President, Dr. J. F. Plane, Egeley; vice-president, Dr. H. J. Manier, Oakes; secretary and treasurer, Dr. J. F. Brenckle, Kulm; delegate, Dr. J. F. Plane; alternate, Dr. F. W. Maercklein, Oakes.

Dr. Charles E. Smith, Jr., of St. Paul, died on July 31 at the age of 38. He graduated from Yale, and took his medical course at the University of Pennsylvania. Dr. Smith took an active part in sanitation and preventive medicine, and succeeded Dr. Bracken as secretary and executive officer of the Minnesota State Board of Health, which position he held until failing health compelled him to resign.

POSITION AS LOCUM TENENS WANTED

By a man with ten years experience in general practice. Licensed in Minnesota. Address 155, care of this office.

LOCATION WANTED

By a young graduate of a Class A school with considerable experience, preferably in Minnesota, North or South Dakota. Address 158, care of this office.

SANITARIUM PHYSICIAN WANTED

A good physician to take charge of the medical department of a Minnesota Sanitarium. Give all particulars with salary expected. Address 156, care of this office.

LOCATION WANTED

Minnesota location or position as assistant wanted by a graduate of A school; married; age 31; good personality and energetic; 4 years' experience in hospitals and government service. Address 159 care of this office.

POSITION WANTED

Position as röntgenologist and laboratory technician. One-half year's experience in x-ray and one year in laboratory routine work. Do not mind dropping x-ray work for position as laboratory technician alone. Write Sgt. E. Hanson, M. D., Fort Snelling, Minn., or call Midway 7600.

PHYSICIAN WANTED

Kensington, Minn., is in need of a physician at once. A Scandinavian preferred. Very big territory and the finest farming country in the state. Booming town. For further information, write E. T. Bjorklund, Kensington, Minn.

MINNEAPOLIS OFFICE FOR RENT

A tile-floored room, 10 ft. x 18 ft. in size, in one of the best office buildings on Nicollet Avenue is offered at moderat rent. It is especially suitable for a physician or specialist. Address 161, care of this office.

FILING CABINET FOR SALE

A $150 McCaskey Cabinet Filing System in excellent condition, used but a short time. $75 takes it. Address Dr. Otto J. Seifert, New Ulm, Minn.

GOOD LOCATION WANTED

A high-grade young physician who has had an unusual training, some general practice, and two years with a leading surgeon of the Twin Cities, desires a good field, and would like one with near-by hospital facilities or a field that will help to start a hospital. Highest of references. Address 160, care of this office.

LOCATION WANTED

By a graduate of a Class A school and several years' experience. Can do good work in any of the branches of medicine or surgery. Willing pay a reasonable price for a good practice. Address 164, care of this office.

POSITION WANTED BY LABORATORY TECHNICIAN

Desires position after August 1 up to Sept. 1. Does all routine laboratory work, besides spinal fluid and cutting tissue. Also a good dietician. Now engaged in a sanatorium, but prefers hospital work, Excellent references. Address 153, care of this office.

To the Medical Profession

The Ethical and Scientific policies of the National Pathological Laboratories, wherever they are situated, are subject to the action of an Advisory Board composed as follows:

DR. GEO. DOCK
Professor of Medicine, Washington University
St. Louis

DR. OTTO FOLIN
Professor of Biological Chemistry, Harvard Medical School, Boston

DR. LUDVIG HEKTOEN
Director John McCormick Institute for Infectious Diseases, Chicago

The members of this Board, while not directly concerned with the routine of the individual laboratories, will, however, specify the methods to be used and keep the laboratories in touch with the most modern advances that will be useful in aiding the practicing physician. And they may be called upon to interpret results when any doubt arises.

Problems relating to the application of laboratory service to clinical medicine will be referred to Dr. Dock; Dr. Folin's advice will be followed in problems of blood chemistry and other biochemical subjects; questions relating to tissue diagnosis, bacteriological and serological methods will be referred to Dr. Hektoen.

Ethical questions will be referred to all members of the board and its action will determine the policies of the various laboratories.

NATIONAL PATHOLOGICAL LABORATORIES, Inc.
5 South Wabash Ave., CHICAGO
NEW YORK: 18 East 41st St. DETROIT: 910 Peter Smith Bldg. ST. LOUIS: University Club Bldg.

The Management of an Infant's Diet

DIARRHEA OF INFANTS

Three recommendations are made—

Stop at once the giving of milk.
Thoroughly clean out the intestinal tract.
Give nourishment composed of food elements capable of being absorbed with minimum digestive effort.

A diet that meets the condition is prepared as follows:

Mellin's Food . . . 4 level tablespoonfuls
Water (boiled, then cooled) . . **16 fluidounces**

Feed small amounts at frequent intervals.

It is further suggested:—As soon as the stools lessen in number and improve in character, gradually build up the diet by substituting one ounce of skimmed milk for one ounce of water until the amount of skimmed milk is equal to the quantity of milk usually given for the age of the infant; also that no milk fat be given until the baby has completely recovered.

MELLIN'S FOOD COMPANY, BOSTON, MASS.

PUBLISHER'S DEPARTMENT

MELLIN'S FOOD

In no other department of medicine has greater progress been made along scientific lines than in infant ond invalid feeding. On the food question all doctors hail from Missouri. It is "show me" at the bedside and in the laboratory; and the result has been to make every manufacturer of food show a formula that scientific methods of investigation aprovpe.

Mellin's Food has stood these tests so successfully that its scientific standing is unquestioned. It is a food commended by the profession.

OPTOLACTIN.

A definite statement of what Optolactin is, and the further fact that it is a product of the laboratory of Messrs. Fairchild Bros. & Foster, will convince any physician that Optolactin is a remedy of great usefulness and unquestionable merit.

It is composed of the mixed cultures of the bacillus bulgaricus, type A, and of the bacillus acidolphilus. Its use is to combat putrefactive organisms, as originally proposed by Metchnikoff.

It is a scientific medicine used almost daily in the practice of every physician, and perhaps used too infrequently, for it goes to the root of many stomach disorders capable of doing great harm.

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These varying results are due, not to any failure in the technic of the operator, nor to any fault of the tube, but to the varying amount of current passing through the tube. This variation is due to the changing temperature of the filament.

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This old and dependable house issues a 50-page pamphlet entitled "Therapeutic Notes on Sharp & Dohme's Specialities." Probably the most notable features of these remedies is the large number of standard drugs put up in the elegant form mode possible by high-grade investigators. It is especially notable for the use of drugs that have stood the test of all time in the hands of both old ond new physicians and in and outside of the modern laboratory.

It is also noted for the large number of staples put up by this house in a form much more attractive to physicians and patients than the prescription filled by the best pharmacists in city or country; and when these are once prescribed the physician asks himself, "Why have I not known of this before?"

The pamphlet of the house tells all these things, and a whole lot more.

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The Deeds Laboratories of Minneapolis have been designated by the U. S. Public Health Service and Treasury Department as the official laboratory for the Bureau of War Risk Insurance, District No. 10, comprising the States of Minnestoa, North Dakota, South Dakota, and Montana.

DR. MEAD'S NURSES REGISTRY.

Dr. Marion A. Mead, who conducts the Nurses Registry, has had twenty years' experience in nursing service, and is prepared better than anyone else in Minneapolis to supply nurses and attendants of all kinds, and to receive calls for such help at any hour of the day or night.

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This Registry is thoroughly dependable.

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The value of radium and *x*-ray therapy and of *x*-ray diagnosis are no longer open questions, though the full curative value of radium has not yet been determined. The question now, in each case, is as to the efficiency and dependability of the man who administers the remedy or makes the diagnosis when, in a large percentage of cases, life depends upon this man.

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A Burdick Quartz Lamp is a valuable addition to a physician's office, and soon pays for itself in the return of its cost, besides the satisfaction it gives patients.

Mr. Kirkby V. Black is the Northwestern territorial representative of the manufacturers and has offices at 827 1-2 Nicollet Avenue, Minneapolis, where he will be glad to demonstrate the lamp at any time.

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The Burnham Soluble Iodine Co., through its expert

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THE NORTHWESTERN HOSPITAL OF MINNEAPOLIS

The Northwestern Hospital of Minneapolis is a very large institution and a very eminently successful one. It has a staff of over forty men eminent in the medical profession of the Northwest, many of them having national reputations.

It is managed by women who possess executive ability enough to finance and conduct the hospital proper and to delegate the staff work to professional men especially equipped for and adapted to such work. This is, indeed, a happy combination, capable of attaining ends not within the grasp of either group working independent of the other.

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Full information can be obtained from Miss Corintha Blachly, Supt., 2627 Chicago Ave. So.

INTRAVENOUS MEDICATION

Drug nihilism has done the medical profession a great deal of harm by lessening the confidence of laymen in both drugs and physicians. It has fostered quacks and discredited men who give but few drugs, as well as men who give shot-gun prescriptions and change their remedies at every call.

The cause of this unfortunate condition is due largely to stomach medication carried to such an extent that the layman has come to consider the remedy worse than the disease. But the advent of intravenous theraphy has re-established confidence in drugs and has saved the stomach of many a patient. Its good results are unquestionable, and bad effects are almost nil.

We know of a city sanitarium using intravenous medication almost exclusively, and so popular has it become that the treatment of ambulant cases coming to the office gives nearly $50 a day income to the sanitarium.

The New York Intravenous Laboratory, of New York City, is a pioneer in this line, and its literature, which can be had upon application, tells the whole story of the new medication.

PHYSCIANS INVITED TO VISIT "FOXGLOVE FARM"

The physcians of the Twin Cities and vicinity are invited by Upsher Smith to visit 'Foxglove Farm,' Holdridge, Lake Minnetonka, Minn. The Digitalis plants are now in their prime and many of the physicians of the Twin Cities and vicinity, especially the men who specialize on the heart, will welcome this invitation as it is the only chance to see Digitalis under cultivation on a commercial scale in the Northwest. Digitalis plants are being cut daily and rapidly dried, to avoid decomposition, in a big drying room, especially constructed for the purpose of making this highly potent Digitalis.

By auto the easiest way to reach Foxglove Farm is to take the Minnetonka Boulevard to Minnetonka Mills and then branch to the right (over white bridge) and follow road for about 3.6 miles. Then watch (on right for the steep bridge and cross the bridge and follow the roads for about a block where the road branches to left. The Foxglove Farm is then about a block from this turn (left branch) and can be recognized by a white house and barn. By train get off at Holdridge and walk away from the lake and the white house and barn can easily be seen. Trains leave the G. N. Station at nearly all times of the day.

THE VITIMINES IN THERAPEUTICS.

Why should a physician prescribe vitamine preparations if all the known vitamines can be found in natural foods? Why not simply direct the patient as to the kinds of food to eat? These questions naturally suggest themselves to thoughtful medical men at a time when so much is written on the subject of vitamine deficiency.

In favor of using the extracted vitamines there seems to be scientific evidence that is bound to command our respect. Take, for example, the work of Eddy. This keen observer found that, even though the diet of the child contained an appreciable amount of vitamine B, there was a marked stimulation of growth when 3 per cent of a vitamine extract was added to the food. He explained this on the basis that an extracted vitamine is more readily available than that which is contained normally in food.

Besides, it is easily conceivable that the ingestion of the requisite quantity of any one of the vitamines as found in its natural state would entail the performance of gastronomic feats that would be far from salutary.

Altogether it does seem that a preparation of extracted vitimines, such as is offered by Parke, Davis & Company under the name of Metagen, fills an important therapeutic niche. Metagen has been subjected to carefully conducted clinical investigation and is physiologically standardized for the presence and activity of all three of the vitamines.

ANTISEPTICS.

They were on their way back from the recent national meeting of medical men, and the talk turned to the subject of antiseptics. There was considerable difference of opinion expressed by the several doctors participating as to the actual efficiency of such solutions. One doctor, known to be a very successful practitioner was very emphatic in his expression of opinion regarding Alkalol.

"You may say what you like," he concluded, "but in my mind there is absolutely no doubt of the practical efficiency of Alkalol. I know it because I have tried it. Having gotten results, I use it. If a patient comes to you with an inflamed conjunctiva, sore throat, tonsillitis, or a mouth that feels as if it had been sand-papered use Alkalol, and note its prompt and satisfactory action.

"It does wonderfully good work in pruritis. I use it both as a urethral and vaginal injection. Its action on irritated or inflamed tissue beats any peace congress you ever heard of. I use it internally as an antacid, particularly in hot weather. You can take it from me that irrespective of your present opinion of so-called antiseptics and mouth washes, a trial of Alkalol will convince you that the claims made for it, that it feeds the cells, tones up tissues, overcomes congestion, and is soothing and healing, are founded on fact. It's easy to

try it because you can obtain a sample with literature giving the how and why of its action by writing to the Alkalol Company, Taunton, Mass.

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The manufacturers of Glykeron, the Martin H. Smith Co., of New York, recommend Glykeron especially for coughs, bronchitis, pneumonia, whooping-cough, asthma, etc., and they assure medical men that a fair trial of the remedy will give results so satisfactory as to please any doctor.

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No remedy can hold its own and make new friends in these days of exact diagnosis and limited drug-giving unless it has real merit. Mere propaganda will not establish any pharmaceutical to-day in high medical circles, and it follows that the remedies of yesterday survive only because they have stood the bedside tests made by men of keen observation.

Glykeron is designed solely for use on order of physicians.

THE LINCOLN CLINIC AND HOSPITAL, OF ABERDEEN, SOUTH DAKOTA

Group medicine may be practiced with some degree of success under almost any conditions and almost anywhere; but it can never be a complete success outside of a suitable clinic building or quarters and an attached hospital.

A short time ago a group of high-grade men formed the Aberdeen Clinic in Aberdeen, South Dakota. Immediate success followed the opening of the Clinic, and the immediate need of a hospital became apparent. A beautiful hospital building of four stories and basement was erected adjoining the Clinic building a few months ago, and its work since has served further to emphasize its need—its indispensableness.

It takes money and courage and ability (both medical and financial) to do such work, but the need for such institutions and their benefits to the public justify such ventures.

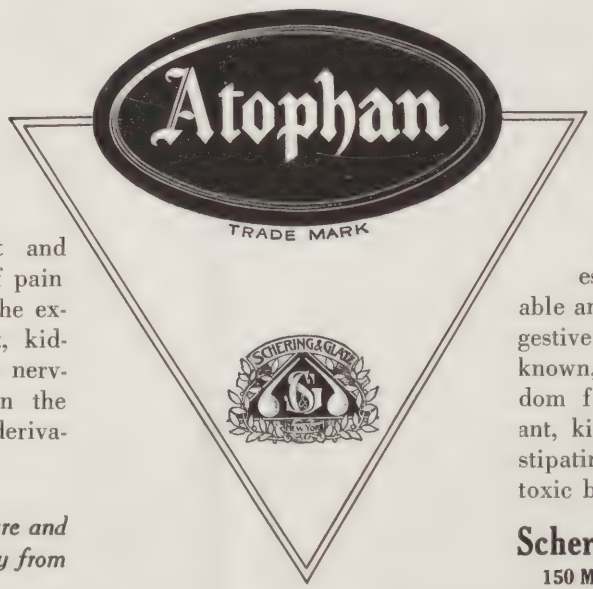
Group medicine of this character is a credit to any old and rich and populous community; but it is a greater credit to a comparatively new community in a comparatively new state, such as Aberdeen, even though the state of South Dakota is a comparatively very rich state.

We congratulate the founders and the present staff of the Aberdeen Clinic and Lincal Hospital.

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LATE RESULTS IN STOMACH SURGERY*

BY ARNOLD SCHWYZER, M. D.
ST. PAUL MINNESOTA

The older a surgeon gets, the oftener he asks himself, "What is really worth while?" And again, "Whose writings of personal experiences are sufficiently objective to guide us?" Good observers at times differ diametrically in their conclusions. A few years ago I heard one of the foremost surgeons of Europe complain that his colleague, the professor of internal medicine, also a man whom you all know, never sent him a case of gastric ulcer unless it was perforated. The experience of that internal man must have been of a kind that he had more confidence in medical treatment than in surgery. This teaches us two things, first, that a strict and proper medical management has its great importance and its just place in the treatment of gastric ulcers, and, secondly, that the surgeon must be ready to give an accurate account of his real results,—the late outcome of his cases. It would be of great interest to compare these results with the late results of medical treatment. The formerly and generally heard objection to the surgeon named, that his results were of short duration, is nearly dead. He wants to prove nowadays that his late results compare most favourably with the medical treatment, even if his patients are only those that do not want to yield to internal treatment or have gone through a number of "permanent cures."

Three years ago I looked up my small experience in gastric surgery, going back to 1904. The material during those fourteen years had comprised 139 cases. They were, with one exception, operated on at St. Joseph's Hospital. I went over this same material again, where it seemed worth while, particularly the carcinoma cases.

In this time, from seventeen years ago until three years ago, we had 15 acute perforations of ulcers with 4 deaths; 89 ulcers and strictures, ptosis and dilations, with 1 death; 9 unclassified cases, mostly indistinct indications, with 2 deaths; 26 carcinomas, in which there were 9 gastro-enterostomies with no deaths; 17 resections of the stomach with 1 death.

The two most important points that can be charged to surgery, are, first, the operative mortality, and secondly, an ulcer formation at the site of the outlet of the stomach, that is, a gastro-jejunal ulcer. These two mishaps are fair objections and must be met fairly by the surgeons, while the difference in relief from pain and other misery may be weighed off between medical and surgical experience. Among 124 operations, not including the acute perforation of ulcers, we had 4 deaths. We were able to find among the 131 patients who survived the operation one post-operative gastro-jejunal ulcer. The patient was a man 45 years old, who had been operated on for a bleeding duodenal ulcer, which

*Presented at the Thirty-fourth Annual Meeting of the North Dakota State Medical Association, Fargo, N. D., May 26 and 27, 1921.

had caused an exsanguinated condition in January, 1918. He was re-operated on in March, 1921. An ulcer was found at the site of the operation by Dr. Schuldt. There is no other case of which I have knowledge where a second operation had become necessary.

Let us look at the causes of the fatal outcomes. The medical treatment has its deaths, too. Some are also directly due to it, like bleeding and perforating cases treated by procrastination. Of the four deaths in our ulcers two were definitely due to too long-drawn-out medical management. One of these came to operation ten days after the symptoms of perforation had set in; the other was treated for an unduly long time without real relief by a prominent internal man. I still believe Leube's teaching the best— that every case which does not yield to a five week's correct Karlsbad and milk treatment in bed, is a surgical case. There should not be any repeating of this treatment, and for this reason it must be executed strictly the first time.

The one death in the 89 ulcer, stricture, and ptosis cases was due to technical difficulties. The patient was very obese. An ulcer of the duodenum existed which was penetrating backward. The patient had been sick for a long time. A posterior gastro-enterostomy was made. The mesocolon was very bulky. The patient died one week after the operation under symptoms of peritonitis.

In the group of unclassified cases, where we placed those that did not have a classical indication like ulceration or definite retention, there were two deaths. One patient was an inveterate drinker who suffered greatly from a severe peripyloritis of more acute appearance, and he died within twenty-four hours from his cardiac condition, which was severely aggravated, principally by the narcosis. The other death was in a case of advanced pulmonary tuberculosis. The operation relieved his gastric distress, but the constant coughing interfered with the healing of his wound, which broke partly open. The patient died of exhaustion. The pathological condition in this case was a somewhat narrow pylorus and principally a tuberculous peripylloritis.

There was finally one death in the carcinoma cases. The parent was an old lady with advanced cachexia and edema of the legs. We wanted to let her have the one chance, but she was too far gone.

So much for our mortality.

It must be remembered that we have treated a good number of ulcers medically; the reported material consists therefore of medical failures.

Let us now review the different groups of conditions in short.

The hypertrophic ulcers of the stomach, sometimes forming large, bulky tumors, are usually encountered at the pylorus or the lesser curvature. They give a history of misery of long duration. A decision whether the tumor is malignant or simply a thick inflammatory mass is not always easy. It is best to treat these cases by resection, which gives the most satisfactory results and which saves the situation if there should be malignancy. In our material there were three such large ulcer tumors. They were treated by partial gastrectomy. All three patients are well and happy. The operations date back seven and a half, six and a half and four and a half years. Simple excision of the ulcer we have never done, but have combined it with a drainage operation.

Gastro-enterostomy as done generally now-a-days is a posterior retrocolic one, but, where the mesocolon is too short or thick or where the lesser peritoneal cavity is obliterated, the anterior method may be done as well. In regard to the late results: A few anterior gastro-enterostomies were among our material, four of them over sixteen years ago, and the results are just as good as in the others. In these old cases the patients are in excellent condition.

The posterior operation appeals more to one, as it disturbs less the anatomic arrangement, and it was originally welcomed as a safeguard against a vicious circle. With a good downward course of the efferent loop the difference cannot be great. In the material under discussion we have not had any serious trouble from this source.

Of late there is a tendency in the American literature to bring pyloroplasty again to the foreground, be this in Finney's or Horseley's modification. Surely, our sense for anatomic orderliness is better satisfied in this way; but it is necessary that we be dealing with a clean-cut old pyloric stricture without any recent inflammatory signs, and we must be sure that there be no difficulty of passage in the lower duodenum or the duodeno-jejunal junction. With this limitation pyloroplasty has its field. The late results in our material were not quite as good as after gastro-enterostomy.

The latter operation proved itself to give surprisingly good end-results in all kinds of non-malignant conditions where drainage was indicated. Including the perforated ulcers, we have later reports from 59 gastro-enterostomies. Of these 42 are entirely well; 11 are practically well or greatly improved; 5 are improved; and 1 was improved and was lately re-orperated on for gastro-jejunal ulcer.

It did not seem of particular value to go over all the non-malignant cases again after they had been investigated three years ago (*Minnesota Medicine,* April, 1919, a paper read before the Minnesota State Medical Association, August, 1918.) For completeness sake I will mention some of the results of that investigation; and I have only added what reports since that time happened to come to us regarding these patients, like the mentioned gastro-jejunal ulcer.

Leaving aside the cases observed for less than one year after the operation, we found reported as—

Well, 57 cases, or 66 per cent; greatly improved, 12 cases, or 14 per cent, equals 80 per cent. Improved, 15 cases, or 17 per cent; temporarily improved, 2 cases, or 2 per cent.

Well, 30 cases, or 65 per cent; greatly improved, 9 cases, or 19½ per cent equals 84½ per cent. Improved 7 cases, or 15 per cent.

Well, 7 cases, or 77 per cent; greatly improved, 1 case, or 11 per cent, equals 86 per cent. Improved, 1 case, or 11 per cent.

The interesting factor is, that the percentage of complete cures is greatest in the cases longest observed. Among these very old cases the reports were usually enthusiastic, and remarks on the questionnaire like "Am a new man," "No trouble of any kind," "Have never felt better," "Never spent another dollar," "Eat anything fit for a human being to eat," are not uncommon. Therefore one receives the impression that with the years the results rather improve, and, before all, that those who are free from trouble for one year after the operation, mostly stay cured. This last point I want to emphasize as one of the striking results of the investigation.

"After sending the questionnaires and otherwise looking up our 106 discharged non-malignant cases, there were nine from whom we could not get any information. Among the 97 who could be traced, I was surprised to find that only three had subsequently died. These deaths were at least in two instances not connected with the stomach condition. Our study comprised fourteen and one-half years, and many patients were of advanced age. The impression thus had to be that these patients had a very good average resistance, even if the nine untraced cases are considered as suspicious. The often heard objection, that these stomach patients, even after a technically correct operation, are reduced in their power of resistance, is a myth."

The time allotted is short, and I want to say principally a few words concerning our carcinoma cases. There were 26 operations in the space of time under discussion. Nine of these were simply gastro-enterostomies, which could of course have only a temporary effect. Nevertheless one patient lived nearly four years after this palliative procedure. Seventeen were partial gastrectomies. One of these died due to her far-advanced cachexia. Eight were almost too far advanced for a resection, but as we get more relief and longer improvement from a resection than from simple gastro-entrostomy, these operations have their justification. A tenth case was in fairly good condition for twenty-two months, when a recurrence was manifest.

Case 11 was quite interesting in-as-much-as the carcinoma had ulcerated through the stomach wall and had become adherent to the abdominal wall. During the manipulations of freeing of the stomach from the abdominal wall the lumen of the stomach broke open, and constant digital compression became necessary during the resection which included the neighboring adherent abdominal wall. The recovery was surprisingly smooth, and the patient felt well for three years, but died six months later.

Case 12, a lady of 60 years, was operated on in December, 1917. We have a report from her this month, stating that she is well and eats what comes on the table. Her cure is of three and one-half years' duration. She had had an ulcerating carcinoma of the pylorus, for which a comparatively extensive resection was made.

Case 13, a man of 60 years, was operated on on September 27, 1915. In my report of three years ago I entered him as a too far advanced condition. The symptoms previous to the operation dated back three years. The carcinoma comprised the pyloric half of the posterior wall of the stomach and two-thirds of the lesser curvature. The mass could not be lifted out owing to an adhesion twice the size of a silver dollar to

the under surface of the liver. In order to convince ourselves of the inoperability, this adhesion is divided and a small part of liver tissue, about 0.5 cm. thick, is removed with the tumor. It is then found that the tumor is broadly adherent to the pancreas, though it now can be lifted foreward sufficiently to invite resection. Though we were able to save the colic artery while freeing the mass, a large hole remained in the transverse mesocolon. The broad, firm connection of the tumor backward to the pancreas makes it necessary to remove about a teaspoonful of pancreatic tissue, together with much pancreatic fat and edematous connective tissue. One large lymphnode in the gastroduodenopancreatic corner was removed in continuity with the tumor. I report the case a little more in detail, as, notwithstanding the advanced state of affairs our patient is in good health now after more than five and one-half years. The determing point in this and every case is the state of involvement of the lymphatics. There was only one enlarged gland found, and it was in closest proximity to the tumor. The adhesions were principally inflammatory.

On May 13, 1921, he writes me that his weight is 149 lb., while he weighed only 117 lb. after the operation. "Providing I don't work too hard and do not lift too heavy," he writes, "I feel as well as I think I could possibly feel at my age, even if I never had an operation. As for my eating, I eat three hearty meals a day, but I have to be careful not to overload my stomach, and I haven't lunched between meals for three years or more. If I do overload my stomach or if I eat quite as much as my appetite craves, the food seems to leave my stomach too soon and distresses me some. I usually lie down after eating for thirty minutes or more, which seems to help me a great deal. There are a few things which do not agree with me very well, such as sweet stuffs and milk. Vegetables agree better with me than anything else. My bowels are as regular as a clock and I haven't taken a drop of medicine of any kind since my operation. I also sleep very well. I think I have mentioned everything of importance to you outside of the fact that everybody I tell about my operation seems to think that I am trying to bluff them and refuse to believe me because I am feeling so well."

This letter is rather typical and portrays pretty well the late condition of these cases. They have to be careful not to eat too much at one time, but are otherwise well.

Case 14, a lady 56 years old, was operated on on April 10, 1915, for a carcinoma of the pylorus. She had a very smooth recovery, and left the hospital nine days after the operation. I heard from her a few days ago; she gained over 30 lb. since her operation, eats everything and, though she vomits now and then, she still works with her 62 years and does the washing for the family.

Case 15, a man of 66 years, had his operation on April 22, 1915. It was again a carcinoma of the pyloric area, on the posterior wall. The symptoms dated back three years. For one year he had suffered from severe pain and vomiting. This patient, now 72 years old, feels pretty well, eats most things, looks well, and, though he easily vomits at times, has no pains,—six years after the operation.

Case 16, a man of 60 years, was operated on in Janaury, 1915, for a pylorus carcinoma after he had had stomach trouble for twenty-five years. His son reports him as in the finest of conditions, after six and one-fourth years. He "eats everything" and "has not been near a doctor since the operation."

I hope you will forgive my mentioning some of these enthusiastic remarks by the patients, as they give a more vivid picture of the mental condition of these people.

Case 17 was a man of 60 years when he had his operation, which was one of my most extensive resections of the stomach. His carcinoma was of the cylindrical cell type and was located on the posterior wall near the pylorus. It was the size of a woman's fist. The specimen is in the pathological collection of the University of Minnesota. The freedom from involvement of the lymphatic structures and a resection far away from the growth in the healthy area were undoubtedly the determining factors which kept this man, now 76 years old, free from recurrence. He is in good health, sixteen and one-fourth years after the operation.

I have given you here the experience as we had it—all of it—during the period under discussion. I think the fact that we chose a space of time which terminated already three years ago, allows us to see more objectively, and to get more of a definite idea of what really happens later on,—the information we set out to get.

The mortality for the twenty-six operations

for carcinoma of the stomach is less than 4 per cent, and even for the resections it is less than 6 per cent. This is perhaps particularly lucky, and, as the material is small, it has no particular statistical value, but, on the other hand, this limitation in the number allowed us to contemplate the cases individually.

Seven out of the 16 resected cases who survived the operation, passed the three-year limit —equal to 44 per cent. Six of them, 37.5 per cent—are living and well to-day.

When we consider these carcinoma cases being well after three and one-half, five and one-half, six, six, six and one-fourth years and sixteen and one-fourth years, while the others, except one, were all at least temporarily improved by the operation for up to three years, and were at least rendered happy for a given time, we are allowed to frankly encourage the patient in his decision for the operation and to hold out reasonable hopes for these otherwise desperate conditions. On the other hand we must be clearly conscious that it is an unpardonable mistake to let these patients lose time through an uncertainty in the diagnosis or by a "What's the use" mood on the part of the medical advisor.

The question put at the beginning of this paper, "What is really worth while?" can fairly be answered in regard to surgery on the cancerous stomach: "Yes, it is worth while, really worth while."

DISCUSSION

Dr. W. G. Brown (Fargo): I wish to emphasize a few of the important facts which the essayist has brought out in his paper. Gastric surgery is one of the most important phases of surgery in the abdomen, and it has come to be one of the chief operative procedures. Dr. Schwyzer cities his percentage of cures as between 80 and 84.5 per cent. These results compare very favorably with the percentage of cures or "complaint-free" cases in other clinics. Many observers give a percentage of from 50 to 57 per cent of complete cures. There are many conditions upon which the term "complete cure" depends: the pathological condition present, the technic and operative ability of the surgeon, and the mental condition of the individual. Ulcer of the stomach presents many different phases, and, according to its location and the length of time it has been in progress, does it present peculiar difficulties. The experience of the operator is no small factor in dealing with this part of abdominal surgery. Gastro-enterostomy is the standardized operation and probably has given the greatest success in the treatment of gastric ulcer.

Dr. Schwyzer states that he has in all his cases combined the process of excision of the ulcer with the gastric rays, which probably accounts in large measure for the success obtained in his cases. He cities only one case in which he has had hemorrhage. Where gastro-enterostomy has been performed alone without excision of the ulcer or of the pathological condition, hemmorrhage has been a frequent complication. Of the cases that have had hemorrhage before operation, probably about 12 per cent will have hemorrhage after operation. In my limited experience I have in mind one case in which I did gastro-enterostomy, and within a week the patient died with severe gastric hemorrhage. Excision of the ulcer at that time would probably have eliminated this unfortunate complication. The extrinsic and intrinsic conditions of gastric hemorrhage are important in diagnosis. There are many conditions inside the abdomen whereby we may be led astray in making diagnosis, and many a case has been operated on because of the one symptom of hemorrhage wherein there was no lesion within the stomach.

The extrinsic cases have been pointed out by Dr. Balfour and many others—from infection of the gall-bladder, the pancreas and spleen, also chronic appendicitis, and many other conditions within the abdomen. Before surgery is undertaken, it must be established from a careful history of the case, by radiography and other diagnostic measures, that gastric ulcer is present. In any case wherein this evidence cannot be obtained, surgery should not be undertaken.

Dr. Edward S. Judd (Rochester, Minn.): Dr. Schwyzer is to be congratulated on his excellent results following operation for ulcer of the stomach. The immediate mortality in his cases is considerably lower than that reported by most men.

There is one phase of this surgery in which I have been very much interested recently, and that is the formation of a secondary ulcer following gastro-enterostomy. A short time ago I reviewed and reported before the Academy of Medicine, in St. Paul, 101 cases of secondary ulcer occurring after gastro-enterostomy. These ulcers were found in cases in which we had operated secondarily and established a diagnosis. About one-third of them were our own cases, and two-thirds were cases primarily operated on elsewhere. In an attempt to determine the percentage of recurrences, I figure that during the time we accumulated these 101 cases of secondary ulcer we had 4,324 primary operations, which made the percentage of recurrences after gastro-enterostomy practically the same as that reported by Patterson,—1 or 2 per cent. The cases that occurred in our series were almost entirely in the afferent part of the jejunum. Most of them occurred very close to the suture line, some of them as far as 10 cm. down the afferent part of the jejunum.

I am speaking of these cases because I think, if the secondary jejunal ulcers did not develop, we would have much more satisfactory results following gastro-enterostomy for ulcer.

The clinical picture in this series showed just as did the one case of Dr. Schwyzer's. The patients make a complete recovery from the first operation; there is entire subsidence of all symptoms; and they remain well on an average of six months to a year. However, in one case of recurrence it was eigth years after primary operation before the patient developed an absolute return of his original symptoms. The patient will write that he has had complete relief of symptoms over this length of time, then suddenly has return of all his symptoms. That history is so accurate that you can

practically write the man that he has secondary ulcer. Years ago we figured that if, in a year or so after gastro-enterostomy and consequent relief of symptoms, there was return of symptoms, we were justified in writing the patient that he had a re-activation of the ulcer. Under those conditions we are, I think, justified in writing a man without further examination that he has secondary ulcer.

Some of these cases were very interesting. Six of them perforated through into the colon and formed a gastrocolic fistula. In one case, without any symptoms of ulcer at all, perforation was the first indication. The patient did not know what was wrong with him until an enema of bismuth was given in an attempt to find out what was causing diarrhea. Within a few minutes the *x*-ray plate showed more than half the bismuth in the stomach. As stated, this has occurred in six of our cases, and some thirty cases of that kind have been reported.

DIRECT LARYNGOSCOPY, BRONCHOSCOPY, AND ESOPHAGOSCOPY AS DIAGNOSTIC AIDS*

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Many medical men probably think of the laryngoscope, bronchscoscope and esophagoscope principally as instruments for the removal of foreign bodies from the air and food passages. The purpose of this paper is to emphasize their greater field of usefulness as instruments of precision in the diagnosis of various pathological lesions of the larynx, bronchi, and esophagus, and to outline briefly the more important and frequent conditions in which this method of direct examination may be of considerable diagnostic aid.

The desirability of direct inspection of these organs when suspected of being diseased is self-evident, and we are led to inquire why these instruments are not more frequently used. The principal reasons, I believe, are an exaggerated idea of the difficulties and dangers incident to their employment, a lack of knowledge of the scope and value of their use, and an erroneous belief that a general anesthetic is needed in most cases.

The technic of peroral endoscopy may be acquired by considerable practice on the cadaver and dog and actual experience with patients. The proportion of cases in which a general anesthetic is necessary will be determined by the personal equation of the operator and patient. A thorough peroral endoscopic examination can be made under local anesthesia or without anesthesia of any kind in the majority of all cases. The greatest difficulties are presented in children from six to fifteen years of age, neurotics, and adults with short thick necks; and such cases frequently require a general anesthetic, which is given, not so much to obtund pain, which is generally slight, but more to abolish the reflexes of coughing and vomiting and to quiet apprehension. By suggestion and keeping the patient's mind fixed constantly on the task of breathing deeply and regularly, apprehension, coughing, and retching are greatly lessened. Children under six or seven years of age are mummified by wrapping them tightly in a heavy sheet or blanket after everything is in readiness, a nurse steadying the child's shoulders and body on the table and an assistant holding its head well extended. Exposure of the larynx or pyriform sinuses should not require more than one minute, and the bronchoscope and esophagoscope can be passed and examination completed within five minutes in most cases.

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DIRECT LARYNGOSCOPY

It is taken for granted that careful examination with the laryngeal mirror should precede direct laryngoscopic examination whenever possible. In children the use of the laryngeal mirror is particularly difficult and seldom satisfactory on account of their lack of self-control, and special anatomical peculiarities met with in early life, including short frenum linguæ, and epiglottis longer and less erect, tending to fall backward and conceal the laryngeal entrance. Indirect laryngoscopic examination is also often unsatisfactory in adults who are neurotic or dyspeptic, those having a short frenum or some painful affection preventing satisfactory tongue-protrusion. Others have tongues in constant vermicular action, or an overhanging, infantile type of epiglottis preventing a view of the anterior part of the larynx.

It is in laryngeal diseases of children that the direct laryngoscope is of the greatest value, and

should be more frequently used. In children with laryngeal dyspnea the possibility of a foreign body having entered the larynx should never be overlooked. In infants especially the history of a foreign body may be lacking and the onset of symptoms not always sudden or immediate. Chevalier Jackson reports cases diagnosed as laryngeal diphtheria with administration of antitoxin, going from bad to worse because they were, in reality, cases of an impacted foreign body. Most cases with acute continuous laryngeal dyspnea in children are diagnosed as membranous laryngitis without any direct knowledge of the actual pathology present, and antitoxin is given in large doses. I believe that a careful direct laryngoscopic examination in all cases of laryngeal dyspnea in children would reveal the absence of a membrane in a large percentage of cases and, instead, the presence of an edematous laryngitis, affecting either the arytenoids and aryepiglottic folds or the subglottic region. Because of the loose attachment of the mucosa of the larynx to its cartilaginous walls, edematous swelling is readily induced by bacterial, mechanical, or chemical irritation. Edematous laryngitis may be caused by inhalation of steam, smoke, or chemical vapors, drinking scalding or corrosive liquids, careless application of caustics in pharynx, acute infectious diseases, inflammation in neighboring tissues occurring in quinsy, retropharyngeal abscess and Ludwig's angina, and the anasarca of cardiac or Bright's disease and angioneurotic edema.

During a direct laryngoscopic examination a direct smear or culture may be made from any membrane present, and an intubation tube, if required, inserted by sight.

The more frequent benign laryngeal growths which may be diagnosed and differentiated by endoscopic methods are papilloma, vocal nodules, fibroma, and cystoma. Syphilis, tuberculosis, and intrinsic malignant disease of the larynx may be studied in detail by this method, the extent of the lesion determined, and a specimen removed for microscopical diagnosis if malignancy is suspected. For such removal Jackson's basket tissue forceps is recommended.

Congenital and acquired stenosis and malformations of the larynx may be accurately diagnosed in early infancy with the aid of the laryngoscope.

Suspension laryngoscopy, first demonstrated by Killian in 1911 and later adopted and modified by Lynch, of New Orleans, is unnecessary in diagnosis, but of value in operative procedures in the larynx or pharynx which are apt to be prolonged or which require the free use of both hands. The procedure is painful to the patient and alarming to his friends, and should not be employed unless simpler methods are inadequate.

BRONCHOSCOPY

Not over twenty-five years ago it was thought highly dangerous to enter the trachea or bronchi with any instrument. Killian, in 1897, removed a foreign body from a bronchus, and Cooledge, of Boston, in 1899, performed the first bronchoscopy for foreign body removal in America.

Bronchoscopy is frequently of aid in diagnosing the presence of foreign bodies in the trachea or bronchi. Here, as in the larynx, the presence of the foreign body may not be suspected from the case history. H. H. Forbes reports a case of protracted bronchial pneumonia in an infant which an *x*-ray plate showed to be due to a shingle nail in the right lower lobe bronchus, the removal of which was followed by rapid recovery. The parents were with difficulty convinced of the real cause of the trouble. Emil Mayer reports one case and Jackson two cases of bronchiectasis due to the presence of an unsuspected foreign body. Bodies not opaque to the ray may enter the trachea or bronchi, and the presence and location of such can be determined only with the aid of bronchoscopy.

Substernal goiter, mediastinal glandular and malignant disease, and enlarged thymus generally cause compression of the trachea readily detected by bronchoscopy.

ESOPHAGOSCOPY

Prior to the development of esophagoscopy, what information we had regarding diseases of the esophagus was derived from radiography and fluoroscopy, and post-mortem examinations. Direct inspection of the mucosa of the entire esophagus should assist us in the differential diagnosis of carcinoma, stenosis, ulceration, and diverticula. There are few definite diagnostic signs and symptoms of esophageal disease, and any diagnosis based upon such is apt to be in error. Fluoroscopic and radiographic study should precede esophagoscopy. The two methods of examination supplement each other.

The esophagoscopic picture in carcinoma varies with the duration of the disease. Patches on the mucous membrane similiar to those following the application of silver nitrate, are frequently

an indication of early malignancy, but must be differentiated from luetic lesions. A sensation of hardness or firmness met with in the esophageal wall as the instrument is passed downward or moved laterally suggests early malignancy. In more advanced cases the malignant area has an elevated or polypoid appearance, and may or may not be ulcerated. The border of the malignant ulcer is irregular and the surface bleeds easily. A specimen for diagnosis may be removed with Jackson's biting basket forceps.

Esophagoscopy is the only reliable means we have of diagnosing ulcer of the esophagus. Such an ulcer may be simple, luetic, tuberculous, or actinomycotic. A simple ulcer is usually associated with cicatricial or spastic stenosis. Tuberculous ulceration is characterized by absence of inflammatory changes in the surrounding mucous membrane, edges not elevated and does not bleed easily. Luetic ulcers are apt to be associated with considerable scarring, inflammatory surroundings, border elevated and irregular, and absence of bleeding on sponging.

Stenosis of the esophagus may be cicatricial, spasmodic, or from pressure due to periesophageal disease. Most cases of cicatricial stenosis are due to scar tissue, the result of corrosive poisons or of healed ulcers. The endoscopic picture varies with the degree of stenosis. In addition to the narrowing of the lumen the mucosa over the cicatricial wall is usually paler and thinner than normal. If the stenosis is nearly complete, there is dilatation and chronic inflammation of the mucosa above the stricture. Spasmodic stenosis is probably much more frequent than is generally supposed, and is usually a reflex due to irritation from local disease of the esophagus or from disease more remote, as chronic gastritis, gastric and duodenal ulcer, and carcinoma. It is probable that no case is purely neurotic in nature, some organic cause being associated with the neurotic state in practically all cases. The most frequent locations are in the cricoid region and at the level of the diaphragm. In the former location we meet with increased resistance to the passage of the esophagoscope, no dilation above, normal mucous membrane, and spasm relaxes on steady pressure. In spasmodic stenosis at the hiatus we usually find dilatation and chronic inflammation of the mucous membrane above the lesion. Pressure stenosis may be due to any periesophageal disease or anomaly, including substernal goiter and tubercular, luetic or malignant lymphatic infiltration in the mediastinum. The appearance through the esophagoscope is that of a slit-like crevice in place of the normal lumen, with a more or less normal mucosa. Aortic aneurysm and cardiac dilatation or hypertrophy might cause pressure stenosis, but the use of the esophagoscope would of course be contra-indicated in such cases.

Esophageal diverticula should be studied first by radiography and then with the esophagoscope. The diverticular opening usually appears to be the direct continuation of the esophagus, while the subdiverticular opening is often a small cleft just above the bottom of the diverticulum.

Foreign bodies in the esophagus not opaque to the *x*-ray can be best located by esophagoscopy. Fish bones frequently lodge in a pyriform sinus or upper portion of the esophagus not visible by direct inspection, which can be easily removed with the aid of the esophageal speculum.

INSTRUMENTARIUM

As to the type of instruments best adapted to endoscopic work, the opinions of leading operators vary widely. The Kahler and Brunnings type of proximally illuminated instruments are preferred by Yaukauer, Patterson and Schoonmaker; while Jackson, Ingals, and Mosher use the distal illumination. Each type has its advantages. I personally prefer the distally illuminated instruments of Jackson. The double portable dry cell battery is the most convenient and reliable source of illumination, and a small portable Sorenson suction outfit with universal motor is used to remove secretions. Direct laryngeal and esophageal specula in child's and adult's sizes, one each of the five, seven, and nine millimeter bronchoscopes, one seven and one ten millimeter esophagoscope, long and short foreign body tube forceps, long and short biting forceps with basket tip, comprise the more essential instruments for this diagnostic work.

In conclusion I would emphasize the following points:

1. Peroral endoscopy is not a formidable or dangerous diagnostic procedure when performed by one with the proper training and experience.
2. A general anesthetic will be required in less than 50 per cent of all cases.
3. The greatest field for this method is in the laryngeal diseases of children.
4. The unreliability of the subjective symptom in pathological lesions of the esophagus, and the great value of direct inspection of its entire lu-

men in arriving at an accurate diagnosis.

5. A moderate fee should be charged for a peroral endoscopic examination to encourage its more frequent use. Higher fees should of course be reserved for foreign body, treatment, or operative cases.

6. Valuable data obtained from this work will increase as our clinical material increases; hence closer coöperation between the general practitioner and the specialist in this field will work to the advantage of all concerned.

DISCUSSION

Dr. L. N. Grosvenor (Huron): It does my soul good to hear such a splendid and thorough paper as that which has been read on this subject, and I am glad we have a man in South Dakota who is well equipped and well trained to do this kind of work. This is a comparatively new thing, in that it has been brought to our attention only in the last two or three years, and we nose and throat men are not particularly trained in this line of work, and anyone who expects to do it successfully needs a good deal of training and an extension out-fit. A well-trained, well-equipped man is a valuable asset to the state. So I congratulate Dr. Hoagland on his paper.

Professor Gustav Killian, of Berlin, who did so much to advance this work in the last century, died in February. He did more to develope this line of work, to perfect instruments, and so on, in the early days of it than any body else. He developed suspension laryngoscopy, which is so necessary for the treatment of these cases.

As to the diagnosis and treatment: If you have a patient on the table and you are trying to hold up the speculum, it takes considerable strength to do it, and if you try to do it with one hand you will find it is difficult. Your hand is tired; you can now put the patient on a suspension apparatus, and in the diagnosis and treatment of tuberculous and syphilitic lesions of the larynx it is a great improvement. Where the patient has a laryngitis that is not a simple affair. It is far more important to diagnose early tubercular lesions and get after them in order to save the patient's life, and one who is equipped and trained in this line of work can do these things accurately and with a tremendous lot of satisfaction that he cannot get in any other way by the old-fashioned methods.

As to foreign bodies in the bronchi: We get these cases on the spur of the moment. It is emergency work. They come in on the train in the middle of the night or in the daytime, and you become alarmed to know what to do. These patients are usually scared to death, and they want something done instantly. If you are well equipped, you can do it; if you are not, you may be able to accomplish little or nothing. My friend, Dr. J. D. Lewis, of Minneapolis, who has attended the meetings of this Association two or three times and has demonstrated this work to us, said to me that those who are not doing a large amount of this work and are not well equipped for it by having a large experience, have no business touching these cases. We should send such cases to a man who is well equipped and who is doing a good deal of this work. If a practitioner has not had much experience and has a poor equipment he is very likely to fall down in attempting this work and of getting into trouble; therefore I think we are very fortunate in having such a man in our state as Dr. Hoagland, who is well trained and well equipped for the work.

Dr. Carl A. Hedblom (Rochester, Minn): I wish to second the remarks of Dr. Grosvenor and to congratulate Dr. Hoagland on his excellent paper. He has covered the subject very completely. There is one other indication for bronchoscopy as a diagnostic aid which he has not mentioned, and that is in cases of bronchiectasis. There are cases of bronchiectasis in which the *x*-ray will not show clearly whether or not both sides are involved. In the treatment of bronchiectasis it is very necessary to know whether the process is unilateral or bilateral. If it is the former, there is the possibility that a palliative operation may be done, which in some cases results in a very remarkable improvement; but in bilateral bronchiectasis operation is scarcely ever indicated. Bronchoscopy, which will demonstrate the source of the pus, will give the information that the *x*-ray sometimes fails to give. If the bronchoscope shows the pus comes from bronchi on both sides there is bilateral bronchiectasis. One can also determine by the same method whether all of the lobes are involved, or if it is on the right side, or the upper or lower lobe on the left side, or whether the pus comes from only one lobe. All that is very valuable in outlining any possible treatment.

Dr. Leslie G. Hill (Sioux Falls): I, too, am very glad to have heard this paper, and I congratulate the essayist on it. This is a subject that we in South Dakota have rather sidestepped, and much of this work has gone outside of the state. I am very glad to have heard this discussion. It is a subject we should be more familiar with.

I want to emphasize the remarks of Dr. Grosvenor on being prepared to do this work. The technic must be carefully worked out in order that we may become proficient to do this work. I myself have attempted a little of it, and I am glad to know that Dr. Hoagland is equipped to do it. I would suggest to those who are aiming to perfect themselves in work along this line, that Dr. Lynch, of New Orleans, is a very good man to follow. Dr. Lynch down there among the negroes does a great deal of this work, and the darkies are very good patients for it, the same as they are for any nasal work. They like to be operated on and consider it quite an honor, and they will come in and stand for anything and everything. I saw some of this work years ago when Dr. Lynch was developing his technic, and he was very far from perfect in those days. He was working out his instrument and improving the technic, and every afternoon he would have four or five darkies to work on. Their throats are large, and they will stand for anything short of abuse and seem to glory in the fact that they are doing it for the benefit of science. Dr. Lynch is a very approachable man, and I think perhaps you get a little closer to the throne there and have a better opportunity to see this work than in some of the Eastern cities where it is a little more crowded. It is not easy. It is very technical, and it takes a good deal of experience in order to become proficient at this work. It is very humiliating to undertake cases of this kind and fall down. It is disastrous to yourself and to the

patient, and, unless you are well qualified, you had better let some other fellow do the work until you are equipped to do it yourself.

I am very glad to know there is so much interest manifested in this subject, and I hope we shall soon be able to keep all of these cases inside of our own territory.

Dr. J. B. Gregg (Sioux Falls): In connection with this work, it is very important that you have the confidence of your patient and take plenty of time. In an adult, by using local anesthesia the patient never objects to suspension laryngoscopy. I have used it quite a bit in the treatment of cases of tuberculosis of the larynx It has been satisfactory because your treatment can be carried on more exactly than you can do it in any other way.

With regard to operating on cases of diverticulum of the esophagus: You can pass the esophagoscope into the diverticulum, which aids very much in giving the surgeon an opportunity to locate the pouch, closing it off very readily.

Dr. Hoagland (closing): The subject of suspension laryngoscopy has been referred to in the discussion. I feel that suspension is never necessary for diagnostic purposes. Its principal field of usefulness is in laryngeal cases requiring prolonged operative procedure and the free use of both hands. Many medical men have seen suspension laryngoscopy done in some clinic, for demonstration purposes, perhaps, and think all peroral endoscopic examinations must be as difficult and uncomfortable to the patient. If the comparative ease and simplicity of a direct laryngoscopic examination could be demonstrated to men in general practice, I am sure they would be willing to submit their patients to this diagnostic method much more frequently than they do.

This is a fascinating field of work. The technic may seem difficult and complicated to one who has not had special training and experience. But extensive practice on the cadaver and dog and experience with patients give one the necessary confidence and dexterity. I believe there is a great field of usefulness for this diagnostic procedure. Especially is this true in esophageal disease and in the laryngeal diseases of children.

ARTERIOSCLEROSIS: A PATHOLOGICAL REVIEW*

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The term "arteriosclerosis" was first used by Lobstein in 1835. At that time no attempt was made to differentiate the various types we recognize today nor to separate the true arteriosclerotic changes from the mass of arterial changes which present a few points of resemblance but are in their essential features entirely distinct processes. The name arteriosclerosis was applied loosely to any thickening or rigidity of the vessel-wall; even at the present time a similar conception is the rule.

Modern pathology recognizes several types of true arterio- or atherosclerosis. These are, in the order of their frequency, the nodose form, the diffuse form, the senile form, and Mönckeberg's sclerosis. We must carefully distinguish the arteriosclerotic process from syphilitic aortitis, endarteritis obliterans, in fact, from any of the *inflammatory* processes which affect the arterial wall. For the sake of clearness we must limit the arteriosclerotic process to Clifford Allbutt's definition: "A local or general thickening of the arterial wall with loss of contractility and elasticity, occasioned by fibrous overgrowth mainly of the tunica intima, secondary and proportional to degeneration of the muscular and elastic elements of the media." Before describing the sequence of events in the various arteriosclerotic processes it would be well to understand the normal structure of the arterial tree and the changes that occur in the lifetime of the normal individual. Let us understand from the outset that arteriosclerosis and high blood-pressure are not synonymous, for arterial change can and does exist without hypertension.

The Normal Artery.—On this question observers are as much at variance as they are on the question of the essence of the arteriosclerotic process. Aschoff has made a careful histological study of the changes in the arterial wall from the vessels of infants to the vessels of people of normal age. The most striking changes Aschoff observed were in the media. In infancy the elastic fibers of the media stand out sharply defined and well marked off from each other by the muscle layers. In other words, the media shows, in infancy, an alternation of well-developed elastic fibers and smooth muscle fibers. From childhood on, there is to be noticed a slow but progressive increase in the elastic elements of the media. The individual elastic lamellæ are thicker in cross-section, and there is also an increasing number of fine secondary filaments branching off from these and crossing the muscular layer. The layers, therefore, are ragged on cross section and the alternation of muscle and elastic fibers is not

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apparent. This progressive increase of elastic elements attains its maximum at about the age of thirty-five. For the next fifteen years Aschoff believes the arterial wall remains in a stable condition. After fifty years there is a slowly progressive atrophy of the muscle fibers. The media becomes obviously thinner and presumably weaker.

This normal change after fifty years of age, as Klotz points out, progresses in the following ways: Either the fatty areas give place to a calcareous infiltration with fine calcareous granules appearing in the course of the muscle fibers, or the muscle fibers undergo complete absorption. It is not at all unlikely that both processes occur side by side. At any rate, as a result, the spaces intervening between elastic lamellæ become smaller and smaller because of the approximation of two or more elastic lamellæ or fibers. From the same process the lamellæ appear thickened. At times the calcareous infiltration affects the elastic fibers. As a result these lose their elasticity, and they become more rigid and more expanded as the result of internal pressure.

Work of Thayer and Fabyan.—Marshall Fabyan and W. S. Thayer have made an investigation along the lines Aschoff laid out, but confined their investigation to the normal changes in the radial artery. Their results, based on an examination of sixty-one normal radial arteries, are highly instructive in that they give us the changes in the intima and extima as well as in the media.

At birth the radial artery is delicate, translucent, extremely thin, and collapsing. The inner surface is perfectly smooth. The intima consists of a single endothelial layer lying directly on the surface of a deeply undulating membrane,—the elastica interna. The media consists of transversely arranged smooth muscle fibers with rather large vesicular nuclei and has a depth of about seven or eight layers of cells. Connective tissue is rather scanty. Of this there is a relatively large amount of elastic fibers which on cross section appear very fine, parallel to each other, and run in slightly wavy lines. The elastica externa is neither as coarse nor as deeply undulating as the internal elastic membrane. The adventitia is considerably thicker than the media and consists of compact connective tissue fibers with relatively large nuclei. Elastic fibers are fairly numerous and run in all directions.

With age and growth, the arterial picture changes. Fabyan and Thayer found the changes in the intima especially striking. As early as the middle of the first decade of life a distinct thickening of the intima can be observed. This thickening consists in the appearance throughout the entire intima, or at local points in the intima, of a fresh strip of elastic fibers, which appear to have been split off from the internal elastic membrane. With further growth and development the inner surface of the internal elastic membrane becomes irregular and roughened in outline. There is an ingrowth of connective tissue between the layers of the elastic membrane, the split off elastic fibers and the endothelium. The media also increases in thickness with the growth of the vessel.

In the second decade of life the artery assumes the adult appearance. The walls become thicker, and the width of the intima is materially increased. More longitudinally arranged smooth muscle cells, as well as connective tissue cells, have appeared in the media, thus making that layer thicker. The elastic tissue is less marked

With the exception of the continuance of connectice tissue growth in the media, there is no great change in the third or fourth decades of life.

In the fifth decade, however, a decided change can be observed. The intima becomes diffusely thickened and contains a considerable amount of connective tissue. There is evidence of a slight calcification of the deeper layers of the intima. As in the intimal thickening during the first decade of life, so here the thickening is either diffuse or occurring at local points, or a combination of the two. The media becomes thickened, but relatively less, so that the intima and opposite the local thickenings of the intima the media is thinned.

After the fifth decade a progressive increase in the thickness of the intima can be noted. Extensive deposition of calcareous granules in the deeper layers of the intima occurs in four out of five cases in the eighth and ninth decades. The media becomes rather thinner after the fifth decade; there is a marked increase in the connective tissue, and the tendency to calcification is greater. Opposite points of intimal thickening the media may be thinned or stretched, whereas the muscle fibers have in great part disappeared, having been replaced by connective tissue.

Jores and Hallenberger also point out a very similar series of changes in the arterial wall with the actual life processes, and it would be well to summarize the changes with a suggestion of the physiological causes.

At a relatively early age, as we have seen, an elastic and muscular thickening of the intima appears in the radial artery. With growth and the associated increase in blood-pressure (Blutdruck) the artery responds by strengthening itself, in the intima by the separation of one or more fresh strands of elastic fibers from the inner surface of the elastica interna, and the growth between these of a few connective tissue cells and longitudinal muscle fibers, and in the media and adventitia by a gradual hypertrophy and hyperplasia. After the second decade there is no further change in the adventitia. The intima becomes slightly thickened by reason of the development of more elastic tissue and smooth muscle fibers, and the media shows a slight increase in width. Gradually, during the third and fourth decades, especially in individuals subjected to heavy physical strain, there appear areas in the intima in which there is a distinct thickening of the connective tissue. "The strain has begun to tell upon the vessel wall," as Thayer and Fabyan remark, "and the yielding tube fortifies itself by the connective tissue thickening of the intima and to a lesser extent of the media."

Development and Regression.—As Aschoff has expressed it, the artery of a child and that of a young adult, with its increased amount of elastic tissue, have a low elastic resistance but a high limit of elasticity. Gradually, with the wear and tear of age, or quickly as the result of unusual or excessive strain, the elastic resistance becomes unequal to the burden imposed upon it and the limit of elasticity tends to be passed. The yielding vessel then strengthens itself with a substance which has a much higher elastic resistance but a lower limit of elasticity, namely, connective tissue.

Thus we see the normal development of the arterial tree brings it to a point where regressive changes must fellow. The non-inflammatory character of the connective-tissue new growth precludes the possibility of nourishment from new blood-vessels, and, as the intima becomes more and more thickened, the problem of nutrition becomes more and more difficult, and degenerative changes in the deeper layers of the intima must necessarily follow.

Modern pathology distinguishes, as I have remarked, four types of true arteriosclerosis: nodose, diffuse, senile, and Mönckeberg's sclerosis. I shall take up these in sequence.

The most common form of arteriosclerosis is the nodose form. Macroscopically, this appears in the least developed cases as a thickening and sclerosis of the vessel-wall in patches, more particularly at or around the origin of the branch arteries. These begin as yellowish-white thickenings commonly on the dorsal wall of the descending arch of the aorta, notably affecting the origins of the series of intercostal arteries. Later, as they have grown in size, some may have coalesced, forming in the opened aorta flat but projecting nodes. This form undergoes most readily the atheromatous change and calcification.

These changes are most common in the aorta, but the changes may be present throughout the entire arterial tree, or they may be present elsewhere without affecting the aorta in the same way.

Syphilitic Aortitis and Arteriosclerosis.—Syphilitic aortitis, as Adami points out, is quite comparable to the nodose form of the arteriosclerotic process, and a consideration of the changes that have taken place in the former may help us considerably towards an understanding of the latter. We must remember, however, that we are dealing with a distinct process. The place of lesion is in the ascending aorta and the arch. There the nodes are commonly found in groups. These, in their earlier stages, are large, with a semitranslucent or hyaline appearance. Characteristically, they have little tendency to atheromatous and calcareous change, but exhibit later a scarring or central depression with some puckering. Upon miscroscopic examination the reason for this becomes clear. In this case the primary change is a mild mesaortitis with a small round-celled infiltration around the vasa vasorum and a necrosis and absorption of the elements of the media. At the same time there is an overgrowth of the intimal tissues, and when, as a result, the deeper portions of the new growth exhibit necrotic changes and degeneration, the underlying luetic inflammatory granulation tissue advances new capillaries into the necrotic area. The result is an absorption of the degenerated material, replacement by cicatricial tissue, shrinkage, and scarring.

We see, then, in the syphilitic aortitis a primary weakening of the media, a secondary hyperplasia of the intima followed by necrosis, and degeneration of the new connective tissue. That a similar sequence of events is present in the true arteriosclerotic process is quite probable.

The diffuse form of arteriosclerosis is next in frequency. This condition of the arterial tree is widespread, affecting the entire arterial system.

It is very frequently associated with the nodose form in the aorta. The process begins in the small arteries and capillaries, especially those in the cortex of the kidney, but affecting also those of the brain and heart. This condition often is followed by renal and cardiac changes which do not concern us here. Microscopically, the smooth muscle fibers of the media exhibit hyaline and fatty degeneration, so that the muscular elements are often not recognizable. This change is characteristically seen in the small arteries of the kidney, where the wall of the vessel may appear to consist merely of a homogeneous, hyaline tissue mass. Sometimes the degenerated or atrophied fibers of the media can be made out, but nothing of the elastic lamellæ can be seen. The intima is thickened and represented only by a homogeneous, hyaline material with but few nuclei. The capillaries of the glomeruli show this hyaline change very well, a change which may and frequently does lead to their obliteration. Similar changes occur in the capillaries in practically every organ of the body. The results of these widespread changes are increased resistance to the flow of blood through the capillaries, hypertrophy of the left ventricle, dilatation of the larger arteries from degenerative changes in the muscular and elastic tissues of the media, slowing of the circulation and compensatory proliferation of the subendothelial layer of the inner coat.

Senile Form as a Continuation of Physiological Change.—The senile form of arteriosclerosis is perhaps but a continuation of the physiological series of changes as found by Thayer and Fabyan, Klotz, Aschoff, Jores, and others. Not only the aorta, but many of the arteries, especially in the brain, show these degenerative changes in four out of every five octo- nonogenarians. There is present necrosis with calcification, a process which is especially marked in the deeper layers of the connective-tissue thickening of the intima and in the muscle fibers of the media opposite these points. These changes may go on to actual bone formation. In the senile cases, Fabyan and Thayer observed that in those cases in which cardiac hypertrophy was found, the media and intima were almost uniformly thicker than the average. Of these cases in which aortic insufficiency or chronic nephritis was present, the thickening of both coats appeared more marked, but the change was more noticeable, on the whole, in the intima than in the media.

Mönckeberg's Sclerosis.—The most clinically obvious of all the types of arteriosclerosis is the so-called Mönckeberg's sclerosis. Readily palpable, pipe-stem, or beaded radial arteries are diagnostic of this form. This form, affecting the smaller arteries, is not a true sclerosis, if our definition is a true criterion, for the process in this case affects the media, both primarily and secondarily, with little or no involvement of the intima. The essential change is calcification of the media, which is apt to be preceded by an extensive hypertrophy of the same layer. The process is not diffuse throughout the entire artery, but is intermittent, giving the artery the appearance of a trachea with its consecutive rings. In the most typical cases of Mönckeberg's sclerosis the remainder of the arterial tree shows changes that are entirely unlike the true arteriosclerotic changes. In the aorta there is a complete absence of nodose thickenings of the intima; instead, there is a diffuse dilatation of the aorta, affecting more particularly the thoracic portion. Instead of being thickened, the aortic wall appears to be thinned, and the increase in volume occasioned by this dilatation tends to spread itself not only in breadth, but also in length, the arch of the aorta becoming somewhat tortuous and the descending portion more curved.

In the common iliacs and the carotids are present, in this form of sclerosis, slight depressions in the vessel wall, depressions which tend to have their long axis situated transversely. In fact, the process is the exact reverse of the sclerotic nodosites, a giving way taking place of a thickening in the vessel wall.

The Mönckeberg type of sclerosis, however, is rarely uncomplicated. Usually we find a combination of this type with the nodose form of arteriosclerosis; in fact, the frequent presence of this combination justifies their inclusion under one head as diverse manifestations of a common pathological state.

The Pathological Process.—What fundamental, underlying change is common to these different conditions? What is the sequence of events that leads to these various pathological pictures? These are questions that modern pathology is quite unable to definitely answer. A tremendous amount of experimental work, investigations, etc., has been accumulated in an attempt to answer these questions.

On one thing all modern pathologists are agreed, viz., that the arteriosclerotic process is not an inflammatory process. In this connection it is interesting to note that such famed patholo-

gists as Virchow, Cohnheim, Ranvier, and others held the view that the process was of an inflammatory nature.

Many attempts have been made to reproduce the condition by experimental means. Thoma was the first pathologist to describe a diffuse arteriosclerosis in the dog as a result of a chronic experimental aortic insufficiency. Gilbert and Lyon, French investigators, produced scattered sclerotic and calcareous patches in the vessels of animals by injecting bacteria and their toxins. They got similar results by producing a chronic experimental lead poisoning in animals. None of the lesions, however, were analogous to the arteriosclerosis of man. Josue caused characteristic lesions by the intravenous injection of adrenalin. His results were confirmed by Erb, Pzentkowski, Fisher, and others.

Thoma's Theories.—In our consideration of this sequence of events the work of Thoma is of considerable importance. Thoma first worked out the theory, substantiated by some rather clever experimental work, that the arteriosclerotic process was nothing more than a tissue hyperplasia of the connective-tissue elements of the intima as a result of strain due to excessive pressure. According to Thoma there is, first, a giving way of the media, and then the intima proliferated as a result to restore the equilibrium necessary between the blood-pressure and the strength of the vessel wall. Thoma believed that the compensation restored the lumen to its original caliber, that the dilatation due to the weakening of the media was made up by the intimal proliferation. To prove this contention he injected melted paraffin into a sclerotic aorta of the nodose type under a pressure of 140 or 150 millimeters of mercury and allowed the paraffin to cool. On opening the aorta he found the paraffin casts absolutely smooth with no nodosities showing. Evidently, under normal conditions of blood-pressure, the lumen was of perfect caliber and the nodosities we see on opening the aorta are due to post-mortem contraction after the blood-pressure ceases to act in maintaining the patency of the tube.

The Experimental Work.—In 1889, Gilbert and Lyon published results of experiments which showed for the first time that aortitis might be produced by the repeated injection of cultures of bacteria and toxins. They found, also, that the action of these agents could sometimes be aided by previously wounding the vessel wall mechanically. Histological investigation of the lesions thus produced showed the existence of a fibrocalcareous change, which was perfectly comparable to arteriosclerosis in man.

In 1903 Josue got positive results by the use of adrenalin, and in 1904 Bayloo and Albarede verified Josue's results. Pearce and Stanton, in 1906, found experimental lesions most marked in the thoracic region of the aorta, seldom in the abdominal portion. Histologically, they found proliferative changes in the intima only opposite distinct breaks in the media.

G. R. Rickett of the University of Cambridge adds the results of his experiments to the earlier mass of work. Rickett worked with adrenalin, extract of squill, barium chloride, tobacco, and nicotine. All the changes Rickett observed in these experiments agreed absolutely with the hypothesis, as he states it, that "a merely mechanical factor is alone responsible." The earliest changes observed were stretching, frequently breaking, and an interruption of the elastic fibers. At this earliest stage Rickett observed no other change in the components of the vessel-wall. Soon afterwards, however, fibrillation and splitting of the elastic fibers could be observed, rapidly followed by, but not concomitant with, granular degeneration. In this phase of the degenerative process the muscle elements showed decided indication of involvement. Following upon these changes a deposition of calcium salts was noted along the border of the elastic fibers, apparently displacing some of the muscle tissue, which before was in close apposition to the elastic element.

The Compensatory Nature of the Process.—Rickett observed further that the elastic fibers showed, at this stage of the process, an excessive reaction to elastic tissue stains, a reaction he ascribed as being probably due to the presence of calcium salts. These calcareous fibers soon became massed together, forming a dense, earthy nodule, or lamina, situated in the media, frequently involving almost its entire thickness. Within the limits of this nodule or lamina the distinctness of the individual fibers was lost and no living elements could be distinguished. The intima was thickened in some cases and failed to show thickening in others, but Rickett observed a tendency to thicken in the neighborhood of a break in the calcified tissues. There new elastic fibers, derived either from preëxisting intimal fibers or from splits of the internal elastic lamina, could be seen. Fibroblasts could also be observed. "All these changes," Rickett con-

cludes, "apparently aim at a strengthening of the vessel wall."

In considering the results of experiments, we must remember that the lesions produced in animals are not set forth by any author as being exactly analogous to the lesions as we find them in man, but they are suggestive of the process that produces in man the typically arteriosclerotic type of lesion. We must also take into consideration the fact that such lesions can and do occur in the animals used for experimental purposes quite spontaneously, as a result, probably, of the same series of conditions that are responsible for the occurrence of the lesions in man. Such spontaneous lesions have been noticed by a number of observers. Kaiserling, Klotz, and others have observed these lesions in canines. Satterlee, in 1906, described a high grade arteriosclerosis in the entire aorta of parrots. Sezary, in the same year, in the Parisian Anatomical Laboratory, demonstrated the arteries of a twenty year old cow in which microscopic arteriosclerotic changes were present. The following year Ball showed the presence of arteriosclerosis in cows and horses,—macroscopic lesions, as well as microscopic.

The Work of Oscar Klotz.—In a consideration of the experimental production of arteriosclerosis and theories of sequence of events the work of Klotz is of considerable importance. We have already referred to him in our consideration of the physiological changes that take place in the arterial wall from birth to old age.

Klotz showed that certain bacterial toxins, for example, diphtheritic toxin, lead to medial degeneration, whereas typhoid leads to primary intimal proliferation. The primary intimal proliferation, says Klotz, acts so as to cut off the nutrition of the media, leading to degeneration of the media, this in turn leading to a secondary intimal proliferation, etc.,—a very striking vicious circle, in the form of degeneration of media, followed by intimal proliferation, and this by medial nutrition cut off, thus completing the circle. The circle is very suggestive, and, even though there is considerable doubt as to the place of primary change, the cycle of events is the same, no matter where the process starts.

Klotz undertook a series of experiments to determine the effect of blood-pressure on the production of arteriosclerosis. He had the results of many observers before him, but the work of Josue was perhaps the most important. Josue had injected adrenalin into the ear vein of rabbits and, after several weeks, was able to demonstrate aneurysmal dilatations in the aorta. The dilatations were all the result of medial degeneration. A destruction of the muscular and elastic fibers, with a later deposition of calcium salts, led to a thinning and weakening of the vessel-wall with resultant aneurysms. This work of Josue was subsequently confirmed by a large number of workers.

Klotz sought to show that these effects were not due to a heightened blood-pressure. He cites the results of Braun's work, which showed that when amyl nitrite was used simultaneously with the adrenalin a destruction of the muscle elements of the media still followed, in spite of the decrease in blood-pressure. When Klotz abolished the blood-pressure raising effects of adrenalin, he found the arteries still affected, but more slowly and to a less degree than where the vessels are under tension. By suspending a buck rabbit by the hind legs, head downward, for three minutes each day for 100 to 120 days, Klotz produced lesions that were unquestionably attributable to the effect of heightened blood-pressure. As a result of this unusual position of the rabbit there was an unaccustomed blood-pressure in the thoracic, cervical, and cranial vessels and reduced pressure in the hind parts of the body. At autopsy the heart was greatly hypertrophied; the arch and the thoracic portion of the aorta were dilated and distinctly thinned; the carotid arteries were larger than normal and exhibited an irregular intimal sclerosis.

The Paradoxical Thickening or Thinning from the Same Cause.—From these results we can deduce the sequence of events. We are assisted in this by the paradox of two separate and distinct results from the same cause. Increased blood-pressure causes aneurysmal dilatation, and the same cause produces a thickening of the arterial wall. This paradox resolves itself, when we consider the process, into a physiological response to strain. The increased pressure leads to strain of the vessel-wall. If the strain is rapid the vessel does not respond by intimal hyperplasia and hypertrophy, but gives way to aneurysm formation; if the strain is not so great the vessel-wall responds by hypertrophy and hyperplasia of all its elements to strengthen the wall. Following this the atheromatous changes we have described earlier, follow in logical sequence.

Further credence is given the compensatory nature of the process by numerous other observations. Alexis Carrel made an autoplastic graft

of a vein of an animal in place of the carotid artery. As a result of the pressure to which the vein was subjected dilatation ensued. At the end of many weeks Carrel found a remarkable hypertrophy of all layers of the vein,—a hypertrophy in which the connective-tissue elements played the chief part.

Effect of Adrenal Glands.—Hornowski used a more physiological method than the injection of drugs to increase the blood-pressure of animals in his experimental work. He transplanted adrenal glands in dogs, putting the transplanted glands deep in the vertebral muscles. Careful operations of this kind were performed on seven dogs. Of these one gave negative results; four gave unmistakably positive results; and the remaining two were weakly positive, that is, the lesions were not microscopic. At autopsy the transplanted adrenals were found to be in perfect physiological activity.

In 1908 Hornowski was unable to demonstrate any change in the adrenal glands of persons with well-developed arteriosclerosis, but in the following year he found a variation in the staining reaction, which he attributed to changed function, either heightened or lowered during life.

Harvey, writing in *Virchow's Archives,* gave the results of work on rabbits, which supports the heightened pressure theory. Harvey compressed the abdominal aorta of young rabbits for three-minute periods over a prolonged time and found that extensive sclerosis could be produced by this method in the aorta above the point of compression. The sclerosis was of the type described by Mönckeberg in man, and consisted in degeneration of the muscular elements with deposits of lime salts in the media. Harvey believed that the sclerosis produced in rabbits by the injection of adrenalin, nicotine, etc., was caused, not by a toxic action of the drugs, but by their power to increase the blood-pressure.

More credence is given to the pressure theory by the reports of cases of arteriosclerosis in the pulmonary artery as a result of mitral stenosis and rarer conditions that affect the caliber of the pulmonary arteries. Lanby and Parvu, Italian investigators, report the case of a girl twenty years old, with a history of no infectious diseases. A diagnosis of mitral stenosis was made and this was confirmed at autopsy. The aorta and the smaller arteries of the general circulation were in normal condition, but the pulmonary arteries showed thickening and sclerosis in their entire extent. Vaquez and Giroux reported another similar case. All four observers agree that the underlying cause in the production of this localized arteriosclerosis was the hypertension resulting from the narrowing of the mitral orifices.

Arteriosclerosis of the Pulmonary Arteries.—Hornowski similarly remarks that "the infrequency of the disease, arteriosclerosis of the pulmonary arteries, can be laid to the fact that the blood-pressure is scarcely one-third of the pressure in the aorta." In a series of cases, Hornowski found 36 cases of arteriosclerosis in which lesions were present in the small, as well as in the large, pulmonary arteries, but were absent in the aorta and elsewhere. Nineteen of these cases were attributed to mitral stenosis; 16 cases were due to chronic emphysematous condition; 1 case was due to adenocarcinoma (pulmonary), which compressed the pulmonary arteries. Hornowski found that the process of calcification was further advanced in the media than in the intima, and, therefore, he concludes "the primary change must have been in the media."

Adler reports experimental work on dogs in which the chief lesions were localized in the intima. In spontaneous sclerosis Adler observed that the sclerotic areas are met with principally in localizations, where the blood is apt to impinge with greater force against the wall of the vessel; for example, in places where the vessel takes a sudden turn in a new direction or at points of branching.

A tremendous amount of experimental work could be introduced, but the results are so uniformly in the same direction that it would be futile to consider them further. Authors and experimenters disagree on the interpretation of their facts, but, strangely enough, the facts are quite in agreement.

The arteriosclerotic process is such a protean disturbance in its manifestations and is so prevalent as a result of the strain and stress of modern life that a comprehensive understanding of the sequence of the process should be a common knowledge of every physician, although we cannot do very much in diminishing the extreme prevalence of that mass of cases of cardiac incompetence, aneurysm, cerebral apoplexy, chronic Bright's disease, etc., which are the results of the process we have described. Sir James Mackenzie says "it may safely be asserted that we know nothing that will restore a diseased artery to a healthy state, and it is doubtful if we have

the means of checking the progress of chronic arterial disease."

The last word, undoubtedly, has not been said on the experimental consideration of the arteriosclerotic process, but enough is known to justify a tentative hypothesis as to the sequence of events. I do not believe we can improve on Clifford Allbutt's definition, viz., "A local or general thickening of the arterial wall with loss of contractility and elasticity, occasioned by fibrous overgrowth, mainly of the tunica intima, secondary and proportional to degeneration of the muscular and elastic elements of the media." This definition at once describes the lesion and suggests the course of events in its production. As a result of degeneration of the muscle fibers of the media, be it due to strain, toxin, or what not, the vessel-wall gives way. This is followed by a hyperplasia and hypertrophy of connective tissue in the intima to restore the equilibrium necessary between the vessel-strength and the blood-pressure. With this non-inflammatory new growth the problem of nourishment for the deeper layers of the intima and media becomes a pressing one,—an unsolved problem, which leads to necrosis and calcification. A vicious circle is set up which ends only with the death of the patient.

DISCUSSION

Dr. John J. McGovern (Milwaukee, Wis.): The treatment of arteriosclerosis is weak, and it is weak because medical men make it so. There is hardly any class of disabilities that more can be done for than the early forms of arteriosclerosis. The early cases, developing in middle adult life, the result of using intoxicants, such as alcohol, tobacco, tea, and coffee, or of acute infections, or absorption of poisons from the intestinal tract and prolonged mental worry and strain, are in hearty eaters and large users of meat. There is no class of cases in which I secure better results in treatment than I do in arteriosclerosis. It is unfortunate that the medical profession should assume an attitude of helplessness when so much can be done to relieve and delay this senile process. To assume the attitude that an individual might just as well die as to change his mode of living is childish. Habits are easily acquired. One may easily change from customary articles of diet to an altogether different class of food without hardship if the change is not brought about too suddenly. Where the cause of early senile change is overeating and a lack of exercise, we should reduce the use of meat, meat gravies, meat soups, fish, tea, coffee, alcohol, tobacco, and every food that acts as a whip to the vascular system or is irritant to the kidneys. Such foods may have to be discontinued entirely. On top of this add an increasing amount of physical exercise so that the individual will finally be taking exercise in some form equal to walking five miles a day. In the course of one year we shall be astonished at the improvement in the physical vigor and general well being of the patient. Many physicians base their opinion of the hopelessness of treatment on their experience in the very late stages of this disease. Even in the late cases, the patient can be frequently kept comfortable for years by judicious management. Individuals who are worrying over business or any of the other responsibilities of life usually try to remove the sources of such worry when their attention is called to the danger of mental strain and worry.

Dr. John H. Rishmiller (Minneapolis, Minn.): It is refreshing to have listened to such a complete dissertation from the pathological viewpoint and all of its side phases on arteriosclerosis, and I desire to digress and make a few remarks relative to the clinical end.

In all my operative work where patients require general anesthesia, three things are always looked after by myself and are not delegated to an interne. First, the heart and lungs are routinely examined with the stethoscope. Second, the blood-pressure is taken with a mercury sphygmomanometer by the auscultatory method. Third, chemical urinalysis is made and, if necessary, microscopic. After one makes these three, which I regard as ordinary examinations and which nobody should consider of minor importance, then one can determine what further investigations should be made; and these, if necessary, should be made by one who is a laboratory technician and who is proficient in this particular line of work. I believe that the pulse-pressure is more of a criterion of the condition of heart and kidneys than urinalysis and auscultation of the heart and lungs.

Several years ago I worked in a hospital, and whenever I requested an interne to take the blood-pressure the apparatus invariably was out of order—in fact, it never was placed in order. The consequence was that the arterial tension of patients was a negligible factor unless it was taken by the attending physician or surgeon. My experience has been that hospitals pay no attention to the surgeon's examination and findings, in his office, preparatory to the patient taking an anesthetic, but, as soon as he enters, the urinalysis is automatically made and one dollar sinecure charge entered, while the pulse-pressure, which, in my opinion, is most important, receives no consideration.

For the past year I have used the Baumanometer and a stethoscope with a bowl and sort of a spring bracelet attachment which can be slipped over the patient's brachial artery, with utmost satisfaction. It has also been proven that the Tycos and Baumanometer run markedly parallel with their indications. The aneroid manometers, such as the Tycos, vary with heat and cold and in this northern climate where in zero weather one takes the Tycos from the office to the home of the patient, it will register about ten degrees higher than the mercury manometer. Consequently, it is well, if one uses the Tycos, to have it warmed in the patient's home before taking the blood-pressure.

Dr. Axel W. Swedenburg (Thief River Falls, Minn.): I have been wondering if eclampsia is a sequence of the epidemic of influenza. It seems that most of the women who have eclampsia have had influenza and are sensitized in some way. I have not had very many cases that have proved fatal, but there have been a number of them in our vicinity and throughout the state, and also in the state of Iowa. Therefore I men-

tion this subject, as it has appeared to me to be a strange coincidence.

In my district I am an examiner for the United States Public Health Service, and on their blanks it is necessary to make notation of the systolic and disastolic blood-pressure. I have observed that in all toxic cases the blood-pressure is relatively high and that the difference between the systolic and diastolic is relatively low.

Dr. John Steele Barnes (Milwaukee, Wis.): In reference to albuminuric retinitis, I would like to ask the essayist as to the dependability of the prognosis in cases of high blood-pressure and continued high blood-pressure. I have often had cases of albuminuric retinitis with contracted kidney, some of them with a bad heart, in which, in spite of our prognosis based on high blood-pressure and inability to materially reduce the blood-pressure, the patients have continued to live. In cases of contracted kidney there is necessarily a high blood-pressure to force the blood through the organ, but I have come to believe that in some of these albuminuric conditions we make a mistake in giving a fatal prognosis. In one severe case, first seen a few years ago, we gave the patient three weeks to live, but she is in fine condition today with a systolic pressure of 220. We saved most of her vision, and it is now 20/40.

Dr. Shedlov (closing): High blood-pressure is of no value in prognosis. If we look upon this arteriosclerotic process as compensatory, we realize it is not wise to try to reduce the blood-pressure very much. The increase of blood-pressure follows practically the same vicious circle as does the thickening of the intima. The arterial wall becomes thicker and the blood-pressure must become higher in order to carry on the normal functions of the body, and the higher the blood-pressure becomes the greater the resistance presented by the vessel-wall; therefore the high blood-pressure per se, is of no value so far as prognosis is concerned. The only element of value in prognosis would be a knowledge of the condition of the arterial tree. Most of those cases end with cerebral hemorrhage, and, if the arteries of the brain are brittle, any unusual strain will break them.

In looking at the subject from the pathological standpoint one takes a more or less pessimistic view; clinically, however, if we get a case very early we can do a lot by proper care, but only by restricting the life activities of the individual, making our patient lead a sort of partial life. Life may be prolonged, to be sure, but we are not restoring our patient to normal.

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Sisler, Clifford Edwin.....U. of Minn., M. B., 1921..City Hospital, St. Paul.
Vail, James Bradford.....U. of Minn., M. B., 1921..General Hospital, Minneapolis.
Van Beeck, Gregory .....U. of Minn., M. B., 1921..Hastings, Minn.
Wheeler, Theodora.....Johns Hopkins., M. D., '16Rochester, Minn.

THROUGH RECIPROCITY

Ellison, David Elias.....U. of Ill. 1916.....1500 Hennepin Av., Minneapolis.
Fleming, Claude Filmore.....Rush, 1903.....2438 Pillsbury Av., Minneapolis.
Gordon, Charles Howard.....Bowdoin 1919.....U. of Minn., Minneapolis, Minn.
Greaves, Fredk. Clarence.....U. of Iowa, 1920.....New Market, Minn.
McCradie, Andrew Ross.....U. of Ill., 1920.....Hendrum, Minn.
Risser, Edward Daniel.....U. of Iowa, 1918.....1702 Arlington Av., Des Moines, Iowa
Strauss, Frederick Bismarck.....Rush, 1901.....Bismarck, N. D.

THE
JOURNAL-LANCET
Represents the Medical Profession of
Minnesota, North Dakota, South Dakota and Montana
The Official Journal of the
North Dakota and South Dakota State Medical Associations

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MINNEAPOLIS, SEPTEMBER 1, 1921

HUNTNG AIR CASTLES IN SPAIN

It had long been a dream of the Editor to visit Spain, especially since reading Blasco Ibanez' books. It looked alluring; and it finally became a probability and then an actuality. Perhaps the trip was roundabout, but it was worth while.

In order to carry out a well-laid plan, we hired a motor car in Paris big enough to carry five people and the chauffeur, and with enough space on top to carry all necessary baggage. We left our hotel on a fine morning at 8:30 prepared for a delightful trip. We got out of Paris twenty-five miles when the magneto discontinued its paid service. We stopped in a little town while the chauffeur took the train back to Paris and got his magneto fixed. In the meantime a charming American woman gave us tea at her villa. At 6:00 P.M. we were on our way, arriving at Orleans at 10:30 P.M. The forenoon of the next day was spent in viewing the old town and its cathedral, and then we went on to Bourges, with its famous church and its ancient stained-glass windows.

Each day we made progress through Southern France, stopping here and there at interesting places, climbing high hills and over mountain roads that gave unsurpassed views of deep, glorious valleys, hills cultivated up to their summits, and mountain tops, with or without snow, gorges that were surmounted by high cliffs, and with a river deep below us. We saw strange cities and towns on top of high places hanging on by sheer force, but substantially built in centuries past. We went to LePuy, Grenoble in the mountains, Avignon, Arles, Nimes, Montpellier, Luchon, Gavarnie, Cauterets, and then along the French side of the Pyrenees,—a trip of wonder and beauty, with great towering mountain peaks near at hand. Finally ended our trip, for a time, at Biarritz, a wateringplace on the Bay of Biscay, where one of us (that one, of course, the Editor) was bitten out of all recognition by mosquitoes. We rested after our 1350-mile auto ride, but the bitten face did not get well for a week; yet the immunization was complete, as mosquitoes bothered the victim no more. The inoculation was successful.

We left Biarritz by train to enter Spain, as no outside automobiles are allowed to cross the border because there is no money in such traffic for Spain. We spent a night at San Sebastian, and found that part of Spain like any other country,—ready to help the traveler and to courteously take his money.

Securing another car, we journeyed over the mountains to Burgos, 150 miles away. There we visited an unusually interesting cathedral, which was about to celebrate its 700th anniversary. From there it was only 150 miles to Madrid. The road was good over the 300 miles, although we had been warned that auto roads in Spain were bad. We went over the Quadarrama mountains and entered Madrid in the evening, and, much to our surprise, found it a small Paris with about 600,000 population. Its streets are broad and tree-shaded, its buildings grand and inspiring, and its hotels are of the best. There we made our headquarters for two weeks, motoring one day to the ancient city of Toledo, and one day to Escorial, Segovia, and La Grandja. Again the tour was over the mountains. We had planned to spend the night at La Grandja, but all the hotels were full. The fountains in the most wonderful garden in Spain were to play the next day, but we could not see them. One of the fountains is said to be greater than the largest one in Versailles. Segovia is on a mountain-top and has an old Roman aqueduct that was built B.C. We drove back to Madrid in the evening, over the cool mountains, by moonlight. Then, a day or two later, the two men of the party took the train for Seville, stopping at Cordova from 6:00 A.M. to noon to view that

wonder city and its castle and Moorish catheral. At Seville, in Southern Spain, it was cool and beautiful. This city ranks among the lovliest in the country, and has a Moorish Alcazar that was edifying. The gardens, parks, and drives were beautiful.

Then we went to Granada by auto, or, rather, we hired a Ford, and for the first 100 miles the roads were good, the towns spotlessly clean, and the weather fine; but after lunch something happened! The roads became rough and dusty, and when we say "dusty" we mean all the word implies. Then, too, the tires became obstinate, and the chauffeur changed tires four times in the next fifty miles, and the passing motors raised such clouds of dust that they were almost unbelieveable. A trail of dust cloud at least a half mile in length covered us, but we finally got there. We were rewarded by the delights of the old Moorish city.. The terrace of the hotel where we had our dinner under the open sky, a full moon coming up over the Sierra Nevada mountains, the city with its wonder lights hundreds of feet below us,—and the air, soft and refreshing, amply repaid us for the dusty roads we had endured. No wonder the Moors loved it and built the great Alhambra and other monuments; and no wonder the Moor king, when his city was retaken, asked permision to take a farewell look from his favorite viewpoint, and, after looking, threw himself to destruction rather than suffer the humiliation of expulsion.

We returned to Madrid by train, and after a day or two left for Barcelona, a big, thriving bustling city with a big port and tremendous shipping facilities. Its parks were ornate, overdone, full of gingerbread monuments, and, although many of its streets are wide and tree-lined, the new architecture was so absurd that it was painful.

From Barcelona we went into France on our way to Nice, which is located on a magnificent bay and has a population, normally, of 150,000; and in season 200,000. Of course, we took the Napoleon road over the mountains to Monte Carlo and Monaca. We saw the gambling carried on by the trained men, but participated in by women and men—mostly old women and men who played a "system" and who won or lost regularly. The sport looked "too cheap" for the Editor, and he began to doubt the stories of "the man who broke the bank at Monte Carlo." It could not be done in a week, if ever at all. The "system" belongs to the bank, and it is not running a health resort! Mentone is a few miles beyond, on the edge of Italy, a resort. We lunched in Italy, in order to say we had done so.

The next day we went by auto again over the mountains in another direction, where we saw gorges and waterfalls and towns built incredibly high up, yet accessible, if one had the time, by donkey, auto, or one's feet.

We visited Grasse, the city which has twenty-six perfume factories, and which is surrounded by fields of flowers for the making of every kind of perfume, blended or pure.

You will remember that Spain is more or less primitive except for its treasure cities. It is barren and bleak, the soil looks thin and poor, yet the harvests were plentiful and the primitive method of threshing grain still exists as it did two thousand years ago. The grain is cut mainly by hand, put in bundles in a large circle about one hundred feet in diameter, and then a big sled driven by boys and hauled by donkeys, horses, or cattle, is driven around and around until the grain is ready for gathering. The chaff and the grain are seperated by throwing the whole mass into the air against the wind—primitive but interesting.

We were told that conveniences in Spain exist only in the best hotels, and we found it so. The old toilet system remain as it was a century or more ago,—a hole in the floor, a squatting position, and a little system in direction are all that one needs. For years Dr. A. W. Abbott has been advising his women patients to discard the modern comfortable toilet seat and get down on their haunches, as in primitive times, in order to get more muscle relaxation and force au naturel. Evidently Dr. Abbott has visited Spain and was impressed by this old-time method.

THE ANNUAL MEETING OF THE MINNESOTA STATE MEDICAL ASSOCIATION

The fifty-third annual meeting of the Minnesota State Medical Association was held at Duluth on August twenty-fifth and twenty-sixth. On the previous day, August twenty-fourth there was the meeting of the Council in the morning and of the House of Delegates in the afternoon. Reports from both the Secretary and Treasurer and from the Council, were made, and received by the House of Delegates. The delegates also passed several resolutions which they thought would be of benefit to the Association and which will come out in the published communication.

The active work of the Association began on Thursday morning, and was carried on with a good deal of vigor by the chairman of both the Section on Medicine and the Section on Surgery. These men, Dr. S. H. Boyer, in Medicine, and Dr. John T. Rogers, in Surgery, were prompt in their rulings, limiting the readers of papers to the prescribed number of minutes and also limiting the men in their discussions, thus both sessions were ended promptly at 12:30 and this was done in order to give an opportunity for joint sessions on both afternoons.

The papers were of the usual interest and covered wide fields; perhaps not altogether arranged in sequence, but the attendance proved that the program was an interesting one. As is usual, the Surgical Section commanded the larger attendance.

Duluth outdid herself in the care and treatment of the guests. She presented the usual hot day which we have all been accustomed to, followed by a day of more moderate temperature; but most of the time the sun was shining on the Duluth hills and on "the great, unsalted sea."

The committees of the St. Louis County Medical Society had everything prepared in advance except that at the last moment they decided to have all meetings at the Spalding Hotel, thus eliminating the necessity of traveling up and down the streets, climbing hills, or sliding down steep places.

The registration was 303. The largest number of those registered were from Duluth, 74, and the next largest number from Minneapolis, 51. There were 37 from St. Paul and 17 from Rochester, making in all about 179. The remaining number, 124, came from the country.

Of the 38 papers read in Duluth, 12 were read by Minneapolis men and 9 by St. Paul men, 8 by Rochester men, 5 by Duluth men, and 4 by men from the country. This shows the necessity of a more varied program, at least in getting the men in the smaller towns to cultivate the habit of writing medical papers and of reading them at a state meeting, thus making themselves better known to their fellow practitioners and their friends in the cities. There is no mental exercise quite so good as writing a medical thesis; and if our readers do not believe this statement, let them, sometime, assume the editorship of a medical journal and really see what it is to be a reader and a writer.

On Thursday night we enjoyed a banquet provided by the Duluth physicians. The dinner was an excellent one, the attendance was large, and there was enough freedom about the three or four speakers of the evening, and a little excitement about the music and the athletic performance which followed.

The election of officers took place on Friday, and resulted in the selection of Dr. J. Frank Corbett as president for the ensuing year. Dr. S. H. Boyer, of Duluth, was re-elected first vice-president. The Councilmen whose term of office had expired were re-elected, namely, Dr. C. E. Dampier, Dr. R. J. Hill, and Dr. F. A. Dodge.

The incoming president has the appointment of a number of committees which have been provided for by a resolution which is supposed to be a working basis for the House of Delegates and will simplify the work of the President and his immediate associates.

NEWS ITEMS

Dr. G. W. Stroebel has moved from Welcome to Duluth.

A number of the physicans of Carrington, N. D., are forming a clinic in that city.

Dr. R. G. Doupe has given up practice at Little Falls, and will go to California.

Dr. E. R. Fouts has moved from Tracy, Mont., to Belt, Mont., where he enters into partnership with Dr. J. W. Graybeal.

Dr. G. W. Frasier, of Hill City, is doing postgraduate work in the Urological Hospital of Chicago, and will locate in Duluth upon his return.

Dr. John A. Duncan, of Havre, Mont., died last month at the age of 68. Dr. Duncan was a graduate of the University of Toronto, Class of '04.

Dr. J. C. Shields, of Butte, Montana, a member of the staff of St. James Hospital, was married last month to Miss Kathryn Hanley, of that city.

Drs. V. E. Verne and H. J. Thornby, of Thief River Falls, have dissolved partnership, as Dr. Verne soon removes to Los Angeles, Calif., to locate.

Dr. A. A. Sorensen, of Aberdeen, S. D., has been in San Francisco, Calif., taking a course in "e'ectronic reactions" under Dr. Albert Abrams of that city.

Dr. Louis Holtz, of Aberdeen, S. D., who has been doing postgraduate work in New York in the N. Y. Post-Graduate Medical School and Hospital, is at home.

Dr. F. W. Briggs, of Fargo, N. D., has become associated with Drs. Boyer, Braden, Collins, McDonald, Scherer, and Shastid, of Duluth. Dr. Briggs will do the eye, ear, nose, and throat work of the group.

Dr. Charles A. McDonald, who has done work for the past two years in a state institution in Traverse City, Mich., was married last month, and has located in Sebeka, Minn.

The Minneapolis, St. Paul & Sault Sainte Marie Railway Surgical Association will hold its fourteenth annual meeting October 21 and 22, 1921, in the Hotel Sherman, Chicago, Ill.

The Children's Bureau of the Minnesota State Board of Control expects to have the younger children in all institutions, public and private, placed under continuous medical supervision.

Dr. J. H. Doupe, who has been at Waubay, S. D., for several years, has completed a two-year postgraduate course in pediatrics in New York, and will associate himself with some clinic in South Dakota.

The Illinois Supreme Court has declared the Medical Practice Act of that state unconstitutional, apparently on the ground of its unreasonable requirements of physicians (chiropractors etc.) seeking licenses.

The State Medical Society of Wisconsin will celebrate its 75th birthday in Milwaukee on Sept. 7, 8, and 9. All physicans who formerly practiced in Wisconsin are cordially invited. The program will be very elaborate.

Dr. Ross D. Benson has moved from Hannaford, N. D., to Minneapolis, and has become associated with Dr. Arnt G. Anderson at 1035 East Franklin Ave. Dr. Benson is a graduate of the Medical School of the University of Minnesota, class of 1912.

Dr. DeWitt H. Garlock, of Los Angeles, Calif., has moved to Bemidji, Minn., and formed a partnership with his brother, Dr. A. V. Garlock, mayor of Bemidiji. Dr. DeWitt H. Garlock is a graduate of Rush. Drs. Garlock & Garlock will do only eye, ear, nose, and throat work.

Over one hundred patients with rare skin diseases were presented by the members at the two-day meeting of the Minnesota Dermatological Society on August 5 and 6, at the University of Minnesota Hospital and the Mayo Clinic. The trip to Rochester was made by auto, and a stop was made at the City and County Hospital, St. Paul, to see a bed-ridden patient with keratoderma gonorrheica, a rare gonorrheal eruption of the skin.

A brief report of the annual meeting of the Minnesota State Medical Association will be found in our editorial columns. The small number of papers by men outside of the larger cities is worthy of attention and serious consideration. It is not the fault of program committees.

The untiring efforts of Dr. Helen Hugh Hielscher, of Mankato, as president of the Women's Auxiliary of the American Legion for the past year, was recognized at the annual meeting, held in Winona, last month, by naming a memorial fund started at that meeting after Dr. Hielscher.

Dr. James Grassick, of Grand Forks, N. D., who has long done exceedingly efficient work for the N. D. Tuberculosis Association has been elected a director of the National Tuberculosis Association and a member of the Mississippi Valley Conference on Tuberculosis, which meets this month.

The new 225-bed hospital building of the Northern Pacific Beneficial Association at St. Paul, opens to-day. It will care for the sick of 10,000 employes and their families of the Northern Pacific. Dr. Arthur W. Ide, of Brainerd, is the superintendent. The building cost several hundred thousand dollars.

Dr. W. J. Mayo, of Rochester, has gone to Peking, China, with Mr. John D. Rockefeller, Jr., and Dr. George E. Vincent, President of the Rockefeller Foundation. They go to take part in the dedication of new buildings given to the Peking Union Medical College by the Foundation. The ceremonies will cover the week of September 15-22.

The hitherto white walls of the General Hospital of Minneapolis are being decorated in colors, prescribed by Dr. Walter E. List, the superintendent, which are supposed to give pleasurable feelings to the patients and thus hasten their recovery. The bad effect of white walls is beyond question; therefore this humanizing of a public hospital is sensible.

A school for the instruction of laboratory technicians will open in St. Paul on October 1. It will be conducted by a commercial laboratory of national service. In addition to the work on the abundant clinical material, lectures will be given by high-grade specialists, and all students will be thoroughly instructed in office work and their duties as assistants to physicans and to patients. The field is a big one, as such trained technicians and office assistants are in great demand at high salaries.

The Greater School of Nursing, to be conducted at the University of Minnesota, is the outgrowth of requests for such school from hospitals, The new school will do the work of the training-school of such hospital, furnishing each coöperative hospital its proportionate number of graduate nurses.

The editor of THE JOURNAL-LANCET is home from a trip abroad. This department is without authentic information, but thinks it was his 500th trip. He learned to speak French in a week, not counting Sunday, and is now building "castles in Spain," which he has classified as "editorials." See some of them elsewhere in this issue; more will follow.

The committee that made a survey of the Medical School of the University of Minnesota, composed of Drs. Finney, of Johns Hopkins; Vaughan, of Ann Arbor; and Billings, of Rush Medical, made its report last month, and the same was published in the Twin City daily of Sunday, August 21. Copies of this report can be had upon application to the President's office; and every physican interested in the Medical School should have a copy. Its publication is likely to renew the old controversy.

Dr. E. W. Swafford, of Sturgis, S. D., died last month at the age of 49. Dr. Swafford had arthritis deformans and was confined to a wheel chair for a number of years, doing such medical work as he could from his office home. During the epidemic of the influenza he lost his wife from the disease. She was a trained nurse, and thus was able to contribute to his comfort, and her faithfulness knew no bounds. Dr. Swafford was highly esteemed by his fellow-men and loved by his fellow-practitioners. He died of atrophic cirrhosis of the liver.

POSITION WANTED BY LABORATORY TECHNICIAN

Desires position after August 1 up to Sept. 1. Does all routine laboratory work, besides spinal fluid and cutting tissue. Also a good dietician. Now engaged in a sanatorium, but prefers hospital work, Excellent references. Address 153, care of this office.

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SANITARIUM PHYSICIAN WANTED

A good physician to take charge of the medical department of a Minnesota Sanitarium. Give all particulars with salary expected. Address 156, care of this office.

LOCATION WANTED

By a young graduate of a Class A school with considerable experience, preferably in Minnesota, North or South Dakota. Address 158, care of this office.

PHYSICIAN WANTED

Kensington, Minn., is in need of a physician at once. A Scandinavian preferred. Very big territory and the finest farming country in the state. Booming town. For further information, write E. T. Bjorklund, Kensington, Minn.

LOCATION WANTED

Minnesota location or position as assistant wanted by a graduate of A school; married; age 31; good personality and energetic; 4 years' experience in hospitals and government service. Address 159 care of this office.

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A high-grade young physician who has had an unusual training, some general practice, and two years with a leading surgeon of the Twin Cities, desires a good field, and would like one with near-by hospital facilities or a field that will help to start a hospital. Highest of references. Address 160, care of this office.

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A $150 McCaskey Cabinet Filing System in excellent condition, used but a short time. $75 takes it. Address Dr. Otto J. Seifert, New Ulm, Minn.

LOCATION WANTED

By a graduate of a Class A school and several years' experience. Can do good work in any of the branches of medicine or surgery. Willing pay a reasonable price for a good practice. Address 164, care of this office.

POSITION WANTED

Position as röntgenologist and laboratory technician. One-half year's experience in *x*-ray and one year in laboratory routine work. Do not mind dropping *x*-ray work for position as laboratory technician alone. Write Sgt. E. Hanson, M. D., Fort Snelling, Minn., or call Midway 7600.

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OFFICE POSITION WANTED

By a young woman of good address, who will give best possible service. A good stenographer and bookkeeper. Has worked in a drug store. Address 167, care of this office.

EYE, EAR, NOSE, AND THROAT PRACTICE FOR SALE

Well established in fine Southern Minnesota City. Will sell for a small cash payment and balance on easy terms. Address 169, care of this office.

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Laboratory technician, college graduate, with two years experience wants position in clinical laboratory. Familiar with complement-fixation and vaccine work, basal metabolism and blood chemistry, as well as routine work. Address 168, care of this office.

PHYSICIAN'S OUTFIT FOR SALE

The instruments, library, operating-table, sterilizers, and microscope of the late Dr. James Halliday are offered for sale cheap. Address Mrs. James Halliday, Mohall, North Dakota.

To the Medical Profession

The Ethical and Scientific policies of the National Pathological Laboratories, wherever they are situated, are subject to the action of an Advisory Board composed as follows:

DR. GEO. DOCK
Professor of Medicine, Washington University
St. Louis

DR. OTTO FOLIN
Professor of Biological Chemistry, Harvard Medical School, Boston

DR. LUDVIG HEKTOEN
Director John McCormick Institute for Infectious Diseases, Chicago

The members of this Board, while not directly concerned with the routine of the individual laboratories, will, however, specify the methods to be used and keep the laboratories in touch with the most modern advances that will be useful in aiding the practicing physician. And they may be called upon to interpret results when any doubt arises.

Problems relating to the application of laboratory service to clinical medicine will be referred to Dr. Dock; Dr. Folin's advice will be followed in problems of blood chemistry and other biochemical subjects; questions relating to tissue diagnosis, bacteriological and serological methods will be referred to Dr. Hektoen.

Ethical questions will be referred to all members of the board and its action will determine the policies of the various laboratories.

NATIONAL PATHOLOGICAL LABORATORIES, Inc.
5 South Wabash Ave., CHICAGO
NEW YORK: 18 East 41st St. DETROIT: 910 Peter Smith Bldg. ST. LOUIS: University Club Bldg.

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A diet that meets the condition is prepared as follows:

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Feed small amounts at frequent intervals.

It is further suggested:—As soon as the stools lessen in number and improve in character, gradually build up the diet by substituting one ounce of skimmed milk for one ounce of water until the amount of skimmed milk is equal to the quantity of milk usually given for the age of the infant; also that no milk fat be given until the baby has completely recovered.

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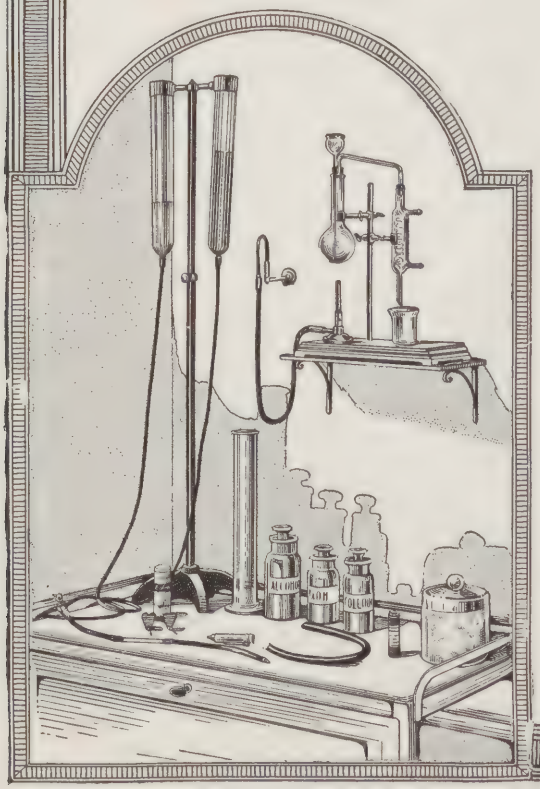
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PUBLISHER'S DEPARTMENT

THE NATIONAL PATHOLOGICAL LABORATORIES

The National Pathological Laboratories, of Chicago, have a corps of pathologists, serologists, bacteriologists, and röntgenologists, who are all specialists in their respective lines. With the laboratories so conveniently situated every physician has this group of experts to render diagnostic service in a reasonably short time and at an equitable fee.

Physicians are advised to keep in close touch with these clinical pathologists and consult with them frequently thereby increasing their own efficiency.

SAL HEPATICA

The American Illustrated Medical Dictionary defines Sal Hepatica as an "effervescent saline laxative and uric solvent." That tells the story, and the general demand for such a remedy has put Sal Hepatica continuously for many years among the "best sellers" from month to month, and that tells the story of its excellence.

THE VICTOR X-RAY APPARATUS

The Victor X-Ray Corporation seeks to give a service to the medical profession in every piece of its apparatus that will enable the physician who uses it to give his patient the best attainable service in this line. To do this every piece of apparatus must function perfectly, not simply when it is new, but through its entire life.

The Victor Corporation issues a periodical called *x*-ray apparatus or have ready access to it, does his work under a great handicap; in some cases, he would be working negligently and be doing harm to his patient.

The physician or surgeon who does not possess some "Service Suggestions," which tells all about *x*-ray work and progress.

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Silver-Salvarsan is a new form of salvarsan manufactured by the H. A. Metz Laboratories of New York City; and the two specific claims of superiority over other forms of salvarsan made for it, are as follows: (1) It effects a more rapid disappearance of the contagious lesions than any other form of salvarsan, and (2) practically no reactions follow its use.

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RIVER PINES FOR THE TUBERCULOUS

Dr. J. W. Coon, medical director of the River Pines Sanatorium for the Tuberculous, gives, in the booklet of the institution, many reasons why the tuberculous find at River Pines conditions most favorable for their restoration to health when their disease has not progressed beyond the hopeful stage. Such booklets contain a fund of information difficult to obtain elsewhere, and should be in the hands of every family physician.

This institution is doing a highly creditable work and has gained the complete confidence of the profession It is located at Stevens Point, Wis.

INSTITUTE OF SURGERY

It is well-nigh unbelievable what can be done by individual instruction given by an expert teacher to an eager-to-learn and apt pupil. A physician who has done little or no surgery, but who knows the underlying principles of surgery and surgical anatomy, can learn in a very short time to do really good surgery in all the minor operations and in some majors.

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Dr. W. J. Sullivan is the secretary of the Institute, and will give full information to anyone who desires it.

LAVORIS

"Lavoris" is a coined word meaning "mouth wash," and as such it was put upon the market. Its very remarkable effect upon the mucous membrane of the mouth soon attracted the attention of physicians, who began to ask for its formula. When they obtained this, they at once recognized the reason of its efficiency, for it is simply a stable zinc chloride antiseptic, which is put up in a form so elegant as to please both physicians and their patients.

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The home of Lavoris is Minneapolis.

A METHOD FOR PREVENTING ABSORPTION OF INTESTINAL TOXINS

"Keep the colon toxins from being absorbed by the body," is the urgent appeal of the modern authority. This is almost tantamount to saying: "Keep the mucus membrane of the colon intact," for it is thorough abra- This is almost tantamount to saying: "Keep the mucous into the colon, that the absorption of toxins from the fecal matter takes place.

To overcome such a condition, Nujol is freely used by the profession. It retards the absorption of poisons by preventing their contact with the living tissues. It also exerts a lubricating power, softening the stools to permit easy and frequent evacuation. In addition to this, an important function of Nujol is the absorption of toxins, retaining them in the fecal mass until expelled.

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THE EARLY MANIFESTATIONS OF SYPHILIS OF THE CENTRAL NERVOUS SYSTEM*

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ST. PAUL.

Satisfactory progress has been made in recent years in every phase of syphilis. With the discovery of the spirocheta pallida and with the introduction of the various arsenical preparations, both the diagnosis and the treatment have been placed on a more scientific basis. Very valuable knowledge can be obtained from the examination of the spinal fluid in the early syphilitic, and this knowledge is of the utmost importance for the prevention of the later degenerative nervous lesions. General systemic invasion of the spirocheta pallida soon after the primary lesion is a well recognized fact. Revault and other observers have shown that in the early untreated primary and secondary syphilitic, from 30 to 67 per cent give evidence of involvement of the central nervous system, manifested by spinal-fluid changes, such as an increased lymphocytosis, an excess of globulin, a positive colloidal gold curve, or even a positive Wassermann. The clinical evidences of this are the headaches, neuralgic pains, nervous irritability, and insomnia secondary to the meningeal irritation. Fortunately, only about 25 per cent of these patients develop syphilis of the central nervous system in later years. Some of these patients, invaded early or treated by the usual routine, are able spontaneously to deal with their neurological infection.

According to Moore, only 12.7 per cent of treated cases showed spinal fluid abnormalities. Thus treatment, even though incomplete, will clear up a spinal fluid in over one-half of the cases and in all probability prevent the later development of degenerative neurosyphilis. Furthermore, in a series of cases where thorough treatment was begun before the appearance of secondary symptoms only 2.9 per cent showed abnormal spinal-fluid changes.

Another important point is, that in the patients in whom no spinal-fluid changes occur early in the disease, frequently no evidences of central nervous involvement or spinal-fluid changes develop in later years. Fordyce states that no serologic evidence as yet exists showing normal spinal fluid in the early stage and its infection at a later period.

The following case illustrates very well the importance of early spinal fluid examination.

Case A. was that of a medical man who contracted an extragenital chancre on his right forefinger in June, 1916. This was recognized early, a blood Wassermann was positive, and intensive antisyphilitic treatment was instituted over a prolonged period. His blood Wassermann has

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been persistently negative since the first two months of treatment; nevertheless, the patient continued taking a course of salvarsan and mercury at regular intervals twice a year. He considered himself cured. I repeatedly advised a spinal-fluid examination, but without avail. In spite of his persistent antisyphilitic treatment, he came to see me January, 1920, because of a marked dilatation of his right pupil. All neurological findings were negative except that his right pupil was dilated and did not respond to light or accommodation. An examination of the spinal fluid at this time gave a positive globulin, 34 lymphocytes per cu. mm., a positive Wassermann, and a marked colloidal gold curve in the syphilitic zone. Combined intravenous and intraspinous treatments were resorted to, but because of unusually severe reactions the intraspinous therapy had to be discontinued. Up to the present time no further clinical symptoms have developed. His spinal fluid is still positive. Judging from our own experience and that of others, his spinal fluid would have cleared up and his clinical symptoms been prevented, in all probability, had we commenced combined intravenous and intraspinous treatment early. Furthermore, we have noted repeatedly that it is difficult to obtain satisfactory clinical and serobiological improvement in patients who have neurosyphilis and have had considerable but incomplete treatment during the earlier manifestations of the disease.

The most brilliant clinical results secured in either the inflammatory or the degenerative type of neurosyphilis were in those patients who had no knowledge of any previous syphilitic infection and at no time had received antisyphilitic treatment. Therefore, it is of the utmost importance, in order to prevent the later development of neurosyphilis, to persist in the treatment of the early syphilitic until he is free from clinical manifestations, until his blood Wassermann has become negative and until his spinal fluid shows no evidence of involvement of the central nervous system. A routine examination of the spinal fluid should be made on every patient suffering from syphilis in its early manifestations before he is advised to discontinue treatment or discharged as recovered. For, as Solomon so well has expressed it, "Thus when the neuropsychiatrist is confronted with a case of syphilis that is, syphilis of the central nervous system, he is face to face with a serious problem. Every case that he sees appears to him to be an accusing finger pointing to some member or members of the medical profession, who have somewhere, sometime, or somehow failed to do their duty by that case."

From the spinal fluid standpoint, syphilis can be divided into four groups:

1. Those cases which at no time show evidence of central nervous involvement or spinal-fluid pathology. (About 70 per cent.)
2. Those superficial cases which are rapidly curable and in which the spinal fluid readily returns to normal.
3. The deep-seated cases, which only yield finally to prolonged and persistent treatment.
4. The Wassermann-fast group, in which, in spite of clinical improvement, the spinal fluid changes are apparently permanent.

Under the last group we have a small percentage of cerebrospinal syphilis and tabes and practically all cases of paresis. I have never seen a case of true paresis in which, with most persistent treatment and in spite of clinical improvement, we were able to obtain a negative Wassermann in the spinal fluid.

I recall a paretic to whom we gave 52 full doses of salvarsan intravenously and 45 intraspinous injections of salvarsanized serum along with mercury and the iodides, in the course of twenty-two months. During this period, he had two complete remissions of three and four months' duration, respectively. At no time were we successful in obtaining a negative Wassermann in the spinal fluid, although the cell count, the globulin, and the colloidal gold test showed some improvement. Nevertheless, we are justified in advising intraspinal therapy in these cases, for, in our experience, a larger percentage of remissions and of longer duration can be procured than with any other form of treatment.

The most important point in the treatment of neurosyphilis is its early recognition, for only then can we check the activities of the organism before permanent degenerative changes have developed.

In asymptomatic neurosyphilis the spinal fluid findings are the only definite evidence. A persistent positive blood Wassermann is highly suggestive, but we frequently find spinal fluid changes with a negative blood test. Stokes and Busman have shown that 30 per cent of seventy blood Wassermann-fast cases gave clinical or serological evidence of neurosyphilis. In a sim-

ilar study, Moore observed 26.9 per cent of fifty-two such cases.

Early clinical evidences of central nervous involvement are the pupillary abnormalities. Irregularity in the outline or inequality in the size of the pupils, unless due to a local lesion, are of the utmost importance, and may occur several years prior to any other clinical manifestation. Similarly, the loss of the consensual reflex or the Argyll-Robertson pupil are most definite and frequently early indications. This reflex change has been reported in other conditions, such as multiple sclerosis and alcoholism, but I have never observed it unless due to syphillis, except in five cases of lethargic encephalitis. Bing states that these pupillary changes are of even greater significance than a Wassermann test. However, this statement was made prior to our present knowledge of spinal fluid examinations.

Case B. was a farmer, 26 years old, referred to me June 18, 1919, with a diagnosis of essential epilepsy. His convulsions were typical grand mal attacks, had existed for about two years, and occurred about one a month. He had no other complaints. He gave a negative venereal history, but admitted exposure. The neurological examination was negative throughout except that both pupils were irregular in outline and the left one responded sluggishly to light. The blood Wassermann was negative. The spinal fluid was under pressure, gave a positive globulin, 48 lymphoctyes per cu. mm., a positive Wassermann, and a syphilitic colloidal gold curve. He was placed on full doses of neosalvarsan with spinal drainage at weekly intervals, combined with mercury and the iodides. After his twelfth treatment, his spinal fluid became negative and has remained so. He has been entirely free from convulsions since his second intravenous injection.

Early subjective symptoms that are indicative of central nervous involvement, are headaches, especially nocturnal in type, general nervousness, indefinite neuralgic pains, and occasionally evidences of bladder and sexual impairment. I have a patient under my care at present with cerebrospinal syphilis, who for four years had impairment of his sexual power before any other symptoms developed. An indefinite neurasthenic syndrome, such as restlessness, irritability, mild insomnia, lack of concentration, dull headaches, etc., is frequently the forerunner of grave syphilitic changes. In an individual with a stable heredity and with no definite etiologic factor, syphilis of the central nervous system must always be excluded. In the young adult it often precedes a cerebrospinal syphilis, and during the later years it may signify an incipient general paresis.

Syphilitic endarteritis of the cerebral blood vessels can manifest itself for a considerable period by attacks of transient aphasia or by an occasional convulsive seizure or frequently by periods of vertigo similar to what is observed in cases of hypertension or chronic renal disease, later on to be followed by a hemiplegia or definite symptoms of a cerebrospinal syphilis.

If these conditions are recognized early, we can often check the progress by proper treatment, and save the patient from a fate of the incurable and invalidism.

Case C., 47 years old, was referred to me by Dr. C. Larsen, February 3, 1917. She had a chancre in 1895 and had taken some mercurial rubs at times. Since September, 1914, she had attacks of vertigo coming on at irregular intervals. These would frequently follow prolonged eye-strain, would be so severe that she was unable to walk alone for three or four days, and then subside entirely for several months. When she attempted to read she would develop a feeling of whirling around. Examination of her eyes and her vision was normal. Neurological examination was negative. Her blood Wassermann has been negative since 1916. An examination of her spinal fluid on June 4, 1917, gave a positive Wassermann a syphilitic colloidal gold curve, an excess of globulin, and six lymphocytes per cu, mm. Under persistent antisyphilitic treatment she made a complete recovery and has been free from vertigo for the past two years.

In conclusion, I want to emphasize two points:

1. A routine examination of the spinal fluid should be made in every case of syphilis. Treatment should be continued until the patient is not only free from clinical manifestations, but until his blood and spinal fluid have become normal.

2. With our present laboratory methods and clinical knowledge, syphilis of the nervous system can be diagnosed in its incipiency, and, if properly and persistently treated, the grave degenerative forms can be reduced to the minimum.

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DISCUSSION

Dr. W. C. Nichols (Fargo): We are indeed fortunate in having had an authoritative presentation of this subject, especially important to those of us who see cases of syphilis with central nervous system changes. Dr. Hammes' statement that 25 per cent of the early untreated cases of syphilis later show central nervous system changes, and that only about 12 per cent of treated cases show spinal fluid abnormalities, raises several questions of interest and importance. I shall refer briefly to two of these points.

1. A consideration of the factors that determine central nervous system localization.
2. A consideration of the degree of responsibility attaching to the medical man who treats the early cases from which later the nervous involvement occurs.

1. Among the factors that determine syphilitic localization the question of variation of strain has been a fertile field for investigation with as yet nothing entirely positive resulting.

Reasoner concluded from experiments on rabbits that it is possible to demonstrate fixed differences in various strains. He was able to reproduce nervous involvement with intracranial inoculation.

Levaditi and Marie are of the opinion that there are two well-marked strains, which they call dermotropic and neurotropic, respectively. They have tried to prove that these types are definite and that infection with one will not necessarily prevent re-infection with the other. They admit, however, the possibility of the evolution of a special strain from a common source by propagation in the nervous centers. They suggest that this evolution may give rise to a persistent new strain. At the present time the proof is probably not adequate, and the opponents of the theory maintain that the determinative factor is in the resistance of the host.

Recently Jackson and Pike, of the Pennsylvania State Hospital for Insane, have published results of an investigation of positive blood Wassermanns in mental diseases which seem to indicate that neuropathic tendencies in themselves do not necessarily predispose to syphilitic central nervous system involvement.

When they found active syphilis as indicated by positive blood Wassermann reaction, they determined that its presence could be considered incidental to the psychosis rather than etiological unless the spinal fluid changes as described by Dr. Hammes were also present.

As to the responsibility of medical men for the development of later nerve lesions, I think that many of us will have to accept the indictment. Unfortunately, reports of comparative results of different methods of treating syphilis have been largely based on blood Wassermann reactions. In treating these cases many syphilographers have been satisfied to clear up the clinical evidence of the disease and to obtain a negative Wassermann reaction. I think, however, that most of us will now be glad to accept the mandate of Dr. Hammes, and, before discharging syphilitics, insist that we make them develop a negative cerebrospinal fluid, as well as a negative blood Wassermann.

Dr. W. M. Hotchkiss (Fargo): A word relative to the treatment, which Dr. Hammes did not go into very deeply, and particularly as regards his findings after the combined treatment of the intravenous and intraspinal method of medication. I think it has been the tendency of all of us who have treated conditions of this kind to depend unduly and too long on the intravenous medication and then possibly go back to the spinal medication in addition. I want to cite my experience in a few cases in which I had very little result from the intravenous medication and had later given in addition the spinous treatment by spinal drainage and then the intraspinal injection. I had very satisfactory results in these cases, and later on I used spinal drainage without intraspinal medication, and the results seemed to be about the same. Now, it would seem that the pressure in the blood-vessels and surrounding spinal fluid would be normally approximately the same. In the advanced stages of tabes and paresis there is a blocking of the fluid with pressure and the relieving of that pressure through spinal drainage must necessarily give a better vascularity to the spinal cord and possibly to the brain, a relative hyperemia. Whether the good results were due to the hyperemic condition brought on by the spinal drainage in addition to the intravenous medication I have not fully satisfied myself, but I think some experiments have been carried on by Sachs and Benedict along that line. As I understand it, their conclusion is that the results of the Swift-Ellis method have been due to the intraspinous drainage rather than to the intraspinal medication.

I am positive that in the early phases of syphilitic involvement the spinal fluid will readily dispose of substances introduced into it through the arachnoidal villi and venous system, but in the later stages where there is blocking of the fluid, which undoubtedly is due to the blocking of the arachnoidal villi and the lymphatics possibly with increase in pressure, and spinal drainage gives the most satisfactory results on account of the relief of pressure and the resulting hyperemia. Of course, that is just a personal opinion.

Dr. Arthur Sweeney (St. Paul, Minn.): The paper presented by Dr. Hammes is to be commended particularly because of the recommendation of routine spinal-fluid examination. I think we do great injustice to our patients in treating for syphilis and never knowing positively when they are free from danger of neurosyphilis. It is an easy thing to do and should be done in all cases of syphilis. Before discharging a patient we should be sure that the spinal fluid shows no evidence of the disease.

In regard to the question of intraspinal medication: I never was quite able to understand the philosophy of this. Because of the amount of spinal fluid (3 or 4 oz.) secreted by the choroid plexus at a rate that permits it to renew itself every three or four hours, I never could satisfy myself that it was logical to introduce

salvarsan into the blood, take a few cubic centimeters of that, extract the serum, and inject that very highly homeopathic dilution of arsenic into the spinal canal in the hope that it would affect the intricate structures of the cord. It would seem to me to be most irrational, and I never could convince myself of the philosphy of it. Furthermore, we are in doubt as to whether the good effects that are attributed to it are due to the original salvarsan or to the homeopathic dilution of arsenic. Considering the height of this dilution, to me it seems irrational that we should expect any particular effect from it. Moreover, in paresis the results are uniformly negative. In a recent article by one of the men in the Massachusetts General Hospital it is shown that paretics die nine months earlier under this treatment than without any treatment at all. I believe that spinal drainage has merit, but I do not believe at all in the intraspinal treatment of salvarsanized serum in any case of neurosyphilis.

THE PROGNOSIS AND TREATMENT IN TUBERCULOSIS OF THE LARYNX*

By J. B. Gregg, A. B., M. S., M. D.
SIOUX FALLS, S. D.

The subject of tuberculosis of the larynx is of vital importance to the general practitioner, to the specialist in tuberculosis, and to the laryngologist; due to its common occurence, to the great desire to alleviate the conditions imposed by the disease, and to its influence on the prognosis of the pulmonary lesion, which is always rendered more grave by the presence of a laryngeal involvement.

In all cases of pulmonary tuberculosis, early and frequently repeated laryngeal examinations should be made by a laryngologist who is conversant with laryngeal tuberculosis in its various phases. This results in the discovery of many cases of incipient laryngeal involvement at a time when proper treatment will be most beneficial to the larynx. Not infrequently we have patients come to us because of the laryngeal condition in whom there have been no symptoms directing attention to a pulmonary lesion. In some cases the diagnosis of tuberculosis of the larynx is made before any demonstrable lesion elsewhere can be found. I remember one patient especially, a medical student, who had a definite tuberculosis of the larynx, demonstrated by microscopical examination of a section two years before the internist could find involvement elsewhere.

Although laryngeal tuberculosis is most frequently co-existent with, or complicates, pulmonary tuberculosis, yet Orth, Demme, Frankel, Progebinisky, Menasse, and Steiner have each reported cases of primary tuberculosis of the larynx in which post-mortem findings have substantiated the clinical diagnosis. Shurly in a large experience has never seen a case. Kyle says that, based upon theoretical grounds and post-mortem examination, it must exist, though rarely. This view is held by Steiner, of the Laryngolischer Universitäts Institut in Prague. Von Ziemessen, Klebs, Eppinger, Watson-Willisma, Grant, Morrell MacKenzie, and others hold that all laryngeal tuberculosis is secondary and can be proved to be such if careful enough post-mortem examinations are made. Personally, I have not seen a case of verified primary involvement of the larynx in approximately 600 cases of laryngeal tuberculosis, most of which were seen at the Iowa State Sanatorium for the Treatment of Tuberculosis.

Laryngeal involvement exists in a certain number of cases of pulmonary tuberculosis, the exact percentage being, in a measure, determined by the accuracy and persistency of examination. Osler gives 18 to 30 per cent, while Willigk estimates the percentage at 13. Schroeder estimates that 20 per cent of all chronic cases of pulmonary tuberculosis have laryngeal complications. Sir St. Clair Thomson states that post-mortem findings prove laryngeal involvement present in 50 per cent of those dying from pulmonary tuberculosis, while based on a study of 693 sanatorium cases, he found the laryngeal complication in 25.6 per cent. In our study we find that among 379 deaths at the sanatorium in the last five years, clinical laryngeal tuberculosis was present in 165, or 43 per cent of the cases. Also from our statistics we find that in 1,737 cases of pulmonary tuberculosis, there were 474 cases of laryngeal involvement, that is, in 27 per cent of the

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total number of cases. The 1,737 pulmonary cases are divided by the general condition into incipient, moderately advanced, and far-advanced cases. In 322 incipient cases laryngeal tuberculosis was found in 10 per cent and in 722 moderately advanced cases it was found in 21 per cent; while in 693 far-advanced cases it was found in 42 per cent of the cases. Thus it is readily seen that the percentage of the laryngeal involvement varies directly with the extent of the general involvement.

Laryngeal tuberculosis occurs more frequently in men, about 70 per cent of cases being males. It is rare in children and in old age, although wide extremes in the age may occasionally be encountered, varying from twelve months to seventy-six years. The majority of the cases develop between the age of twenty and forty years.

Prognosis.—We shall first consider what effect the development of a laryngeal tuberculosis has upon the general prognosis.

Consulting the records of 1,737 cases of pulmonary tuberculosis whose histories can be traced at the Sanatorium, we find laryngeal involvement in 474 cases, or 27 per cent of the total number. In 322 incipient cases laryngeal tuberculosis was found in 31, or 10 per cent. Considering these 31 incipient pulmonary cases with laryngeal involvement, 25 per cent died, 6 per cent were discharged as improved, 38 per cent as quiescent, 22 per cent as apparently arrested, and 3 per cent as arrested, this rating being from the pulmonary and general condition.

In 291 cases of incipient pulmonary tuberculosis without laryngeal involvement, 8 per cent died, 10 per cent were discharged with lungs unimproved, 24 per cent as improved, 22 per cent as quiescent, 29 per cent as apparently arrested, and 7 per cent as arrested.

In 722 moderately advanced cases laryngeal tuberculosis was found in 151. Of these 151 cases of moderately advanced tuberculosis with laryngeal involvement, 17 per cent died, 36 per cent were discharged with lungs unimproved, 18 per cent as improved, 18 per cent as quiescent, 9 per cent as apparently arrested, and 2 per cent as arrested.

In the 571 cases of moderately advanced pulmonary tuberculosis without laryngeal involvement, 10 per cent died, 20 per cent were discharged with lungs unimproved, 25 per cent as improved, 25 per cent as quiescent, 16 per cent as apparently arrested, and 4 per cent as arrested.

In 693 far-advanced pulmonary cases, laryngeal tuberculosis was found in 292, or 42 per cent. Of these 292 cases with the complicating laryngeal lesion, 45 per cent died, 28 per cent were discharged with the lungs unimproved, 21 per cent as improved, 5 per cent as quiescent, 3 per cent as apparently arrested and 6 per cent as arrested.

Of the 401 cases of far-advanced pulmonary tuberculosis without laryngeal involvement, 33 per cent died, 28 per cent were discharged with lungs unimproved, 13 per cent as improved, 19 per cent as quiescent, 6 per cent, as apparently arrested and 1 per cent, as arrested.

Of paramount interest in the above tabulation, is the fact that the percentage of deaths in incipient tuberculosis with laryngeal involvement is three times as great (25 per cent) as is found in the non-complicated pulmonary involvement (8 per cent). In moderately advanced tuberculosis with laryngeal involvement, the mortality was 17 per cent, while in cases without the laryngeal complication the mortality was but 10 per cent. In far-advanced pulmonary tuberculosis with the laryngeal complication, the mortality was 45 per cent, while in the same class of cases without the complication, the mortality was 33 per cent.

Sir St. Clair Thomson analyzes 1,750 patients seen at Midhurst during the last eight years, and deals with 833 seen during four years. He divides these cases into non-laryngeal and laryngeal. These compared show that the prognosis as shown by the percentage of deaths, is rendered graver in both sexes by the presence of laryngeal involvement, and that this increased gravity is manifest whatever the extent to which the lungs may be involved. The detection of a laryngeal lesion, therefore, renders the prognosis more gloomy than in a case of more advanced pulmonary infection with a free larynx.

We shall now take up the prognosis of the laryngeal lesion, which is directly affected (a) by the pulmonary condition present, (b) by the general condition, (c) by the digestion, (d) by the presence or absence of intestinal tuberculosis, (e) by pregnancy, and (f) by the extent of laryngeal involvement.

Pulmonary Condition.—In the moderately advanced cases the larynx was arrested in 16 per cent, improved in 48 per cent, and unimproved

in 33 per cent of cases. It is of interest to note that the larynx improved while the lungs remained unimproved in 22 per cent of the cases; also that the larynx remained unimproved while the lungs improved in 13 per cent of the cases.

In the far-advanced cases the larynx was arrested in 18 per cent, improved in 17 per cent, and unimproved in 64 per cent of cases. From comparison of the laryngeal results in the moderately advanced cases we learn that our prospects of improving the larynx are twice as good in the moderately advanced cases (64 per cent) as in the far-advanced cases (35 per cent). In other words, the laryngeal prognosis varies directly with the extent of the pulmonary involvement.

General Condition—By the general condition we mean the evident ability or lack of ability of the individual to fight against the infection, with or without the tendency toward tissue repair as shown by the previous history.

In our series of cases the laryngeal condition was arrested in 75 per cent of the favorable cases and improved in the remainder. The laryngeal condition was arrested in 27 per cent, improved in 27 per cent, and unimproved in 47 per cent of the guardedly favorable cases. In the unfavorable cases the laryngeal condition was arrested in 13 per cent, improved in 25 per cent, and unimproved in 62 per cent of the cases.

Thus we must realize that our laryngeal prognosis varies directly with a favorable or unfavorable general condition.

Digestion.—Whether or not digestion is impaired is to be considered, inasmuch as impaired digestion makes its results manifest on the system as a whole, with the laryngeal improvement or lack of improvement directly affected.

Intestinal Tuberculosis.—In a study of the general prognostic significance of laryngeal and intestinal tuberculosis occurring together with a pulmonary affair, our records for the last few years have been used. In a series of 239 cases of pulmonary and laryngeal tuberculosis without intestinal involvement there was death in 30 per cent of the cases. In a series of 95 cases of pulmonary and intestinal tuberculosis without laryngeal involvement, there was death in 38 per cent of the cases; while in a series of 49 cases of combined pulmonary, laryngeal, and intestinal tuberculosis death occurred in 61 per cent of the cases.

Pregnancy.—Pregnancy has long been considered a dangerous complication of tuberculosis. Godskesen, of Copenhagen, has laid special emphasis on this condition as a complication of laryngeal tuberculosis. He reports 55 cases, 24 from the literature. Of his 31 cases, 26 developed the condition during pregnancy. The larynx in only 5 cases was improved by active treatment. In 8 cases of pregnancy complicating laryngeal tuberculosis, death occurred in 4, and the larynx was improved in only 2 cases after delivery.

Laryngeal Involvement.—Tuberculosis involvement of the epiglottis or extensive involvement throughout the larynx, denotes a poor prognosis, both as regards life and as regards the ultimate result in the lungs.

In a series of 122 cases of laryngeal tuberculosis we had last year the epiglottis was involved in 27 cases. There was infiltration alone in 8 cases, and infiltration with ulceration in 19 cases. Of the 27 cases showing involvement of the epiglottis, death occurred within one year in 12 cases (44 per cent); while 9 cases were improved. The laryngeal condition remained unimproved in 24 per cent, was improved in 15 per cent, and became arrested in 11 per cent of the cases.

The writer remembers distinctly a number of cases, however, in which the laryngeal involvement was limited entirely to the epiglottis. The epiglottis was amputated, proven tuberculous on section, and the larynx and pulmonary condition, which had remained stationary previous to the amputation, went on to recovery. Epiglottis involvement is one of the most common causes of dysphagia, thus interfering markedly with the nutrition of the patient. We have also found marked infiltration with ulceration of the arytenoids and aryepiglottidean folds, to be an important factor in the production of dysphagia.

Considering the cases of extensive involvement throughout the larynx, 69 per cent died within one year, 15 per cent were unimproved, and 15 per cent improved. The larynx was unimproved in 85 per cent, and improved in 15 per cent of the cases.

It is very evident, therefore, that involvement of the epiglottis or extensive involvement throughout the larynx, indicates a poor prognosis, as regards both life and the probability of improving the laryngeal lesion. The prognosis is better if the mucosa is intact than if the condition is ulcerative.

Treatment.—In the treatment of laryngeal tuberculosis there are certain general features on which all are agreed. The first of these is the influence of careful supervision of the daily life of the patient, his rest, diet, hygiene, exercise, and so on. One should insist that the patient be under sanatorium or hospital treatment, for those who will not place themselves under such care are hampering their progress and, in many instances, turning the balance from recovery to a fatal termination. All of our cases were patients at the State Sanatorium, with which we have the closest co-operation; and it has been largely due to this co-operation that good results have been obtained. Much depends on the patient's determination to do his part, and this unquestionably is made easier by the carefully regulated sanatorium life.

Absolute rest of voice is insisted upon for all, regardless of what their other treatment may be. Some cases of laryngeal tuberculosis are cured wholly by silence.

Steam inhalations, using compound tincture of benzoin twice daily, are given at the Sanatorium.

Lactic acid, in 50 per cent solution, is applied daily to the larynx, the exact lesion being brushed carefully with it. Formalin is used in some cases, beginning with a very weak solution and gradually increasing the strength as rapidly and as far as the patient seems to do well on it. We have applied it in 2 per cent solution with no discomfiture to the patient. Some larynges will do best under one form of treatment; others will demand different treatment. It is only by keeping close watch of the larynx that one gains the best results.

For relief of dysphagia we use orthoform, anesthesin, injection of the superior laryngeal nerves, and where the epiglottis is involved amputation of this structure. It is well to state here, that aside from the relief of pain, the laryngeal lesion is in some cases favorably affected by removal of the epiglottis. This is due more indirectly than directly to the operation; deglution is made easier and the increased alimentation results in improvement in the general condition.

In cases whose general condition is very poor, or where there is a continued and pronounced breaking down in the lungs, only the above treatment is used. This is also true of the cases in which practically the entire larynx is involved.

Given cases that have a fair chance of recovery from the general standpoint, the above method is combined with surgical treatment. The object in this, as in any form of treatment of laryngeal tuberculosis, may be summed up in the one word, *fibrosis.*

Some of the leading exponents of the surgical treatment of laryngeal tuberculosis are Arnoldson, Bar, Gruenwald, Lockard, Blumenthal, Bourack, Imhofer, Bezold, Gleitsman, Heryng, Dennis, Krause, Levy, M. Schmid, Mermod, and Dean.

As a rule, when the diagnosis of laryngeal tuberculosis is made, local applications are first tried, lactic acid, 50 per cent, applied to the larynx daily. If there develops a small infiltration of the vocal angle or the interarytenoid space, the cautery is tried, repeating every fortnight. The local applications are continued as before. If the infiltration does not yield to this treatment, the infiltrated area is curetted. If the infiltration now subsides, the cautery is resumed; if not, the curette is again used in two weeks.

If there is a tuberculoma in the interarytenoid space, or a well-circumscribed tuberculoma of the false cords, or a small tuberculoma or ulcer on the true cords, it is removed by the laryngeal forceps. If there is an interarytenoid tuberculoma, in addition to the excision, the base is curetted. Following this the cautery is used, or the curette, the choice being dependent upon the return of infiltration or tumor. Tuberculomas may require several excisions, but as a rule two or three excisions bring them down to the point where they can be controlled by other methods.

If the local application of lactic acid does not seem to be causing the lesion to fibrose, a change is made to formalin, usually 1 per cent solution. It must be emphasized that the success of treatment is based upon constant observation and a prompt change of treatment when change is indicated.

The results obtained in the treatment of laryngeal tuberculosis have, on the whole, been gratifying. The fact that many cases of tuberculosis have a better result in the larynx than they do in the pulmonary lesion, shows very markedly the efficacy of the treatment. When one recalls that less than twenty-five years ago the presence of a laryngeal tuberculosis was considered a death warrant, one may be pardoned for showing considerable optimism.

All of our cases received the regular routine

treatment,—sanatorium care, rest of voice, steam inhalations, and the local application of lactic acid or formalin as indicated. Forty-one cases received this routine treatment only, while 81 cases received combined routine and surgical treatment. Amputation of the epiglottis was done in 17 cases with good results. Injection of the superior laryngeal nerve was done in 13 cases. It was usually found necessary to reinject about once a week, although some cases were relieved of pain by a single injection. Curettement alone was used in 6 cases; cautery alone in 20, and combined curettement and cautery in 35 cases. In these cases 111 curettements were done and 213 cauteries. All the amputations of the epiglottis and curettements were done by the suspension method; as was also a majority of the cauteries. Using this method, we feel that the treatment is more accurate and thorough.

In our discussion of the treatment we have considered only the developed laryngeal lesion. Prophylactic treatment, which would mean the keeping of the nose, throat, and general system in the best possible condition, the non-use of alcohol, tobacco, etc., will not be considered. Neither shall we discuss the effect of climate or sea-trips, as these come in the field of the internist Heliotherapy and treatment of the larynx with the various electric rays we shall not discuss.

In the treatment of the laryngeal lesion, three conditions are important: time, continual observation, and coöperation of the patient. Time is needed in order to obtain results. Healing is a slow process usually, and the patient must know that it will be a long pull for him. Some cases may require observation and treatment for two years or more. Continual observation is necessary in order that the mode of treatment may be changed if the patient is not doing well. This is true of the surgical methods, as well as of the local applications. Coöperation of the patient is absolutely essential to good results. If the patient is not willing to do his or her part by careful regulation of the mode of life, rest of voice or following whatever treatment is prescribed, there is not much probability of cure.

Results.—A few actual statistics are of interest here, for results are the real criterion. Sir St. Clair Thomson, in reporting 178 cases of laryngeal tuberculosis, gives 20.7 per cent arrested, with 9.4 per cent cured. Bar reports 65 cases, of whom 35 with no rise of temperature were treated, obtaining 33 per cent cures. Mermod in 280 cases reports 60 cured for one year, 40 for two years, 17 for three or more years, and 1 case for 16 years. Lockard reports 154 cases with epiglottidean involvement, 29 of which, or 18.8 per cent, were cured.

Among our cases not treated surgically the larynx in 37, 90 per cent, remained unimproved, while 10 per cent were improved. These cases were considered by the internist as unfit for surgical treatment due to marked progressive involvement of the lungs. Of the cases treated surgically, 38 per cent remained unimproved, 32 per cent improved, and 20 per cent were arrested. Combining the improved and arrested cases, we have a total laryngeal improvement of 62 per cent in the cases treated by the combined routine and surgical methods.

If we consider the pulmonary and general condition of the patient on discharge, and compare with this the laryngeal condition on discharge, we find that in 35 patients who died, the laryngeal condition was unimproved in 34, or 97 per cent, and was arrested in 1 case, or 3 per cent.

The laryngeal condition in 42 cases discharged with lungs unimproved, was unimproved in 28, or 67 per cent, improved in 13, or 31 per cent, and became arrested in 1 case, or 2 per cent.

In 25 cases discharged with the lungs improved, the laryngeal condition was unimproved in 6, or 24 per cent, improved in 13, or 52 per cent, and became arrested in 6, or 24 per cent. Combining improved and arrested larynges we find a total improvement of 76 per cent in cases where the pulmonary and general condition was definitely improved.

Among 15 cases discharged with lungs quiescent, the laryngeal condition was unimproved in 1 case, or 7 per cent; the laryngeal condition was improved in 3, or 20 per cent, and arrested in 11, or 53 per cent, giving a total improvement of 73 per cent.

Five cases were discharged as apparently arrested from the pulmonary and general standpoint, and in each case, or 100 per cent, the larynx was arrested.

The development of tuberculosis of the larynx, renders without any question the final outcome of the disease process less hopeful. This is true, not only because of the added lesion which the body must resist, but it is an added evidence, in early cases, of either a lack of resistance or of a very virulent type of infection. In the aver-

age case it is an evidence that the disease is progressing, that the bodily defenses are being broken down,—in other words, the disease has reached an advanced stage.

Not so many years ago the development of laryngeal tuberculosis was considered as a notice to the physician and the patient that further attempts at resistance were useless. With the advances made in the past twenty years in the treatment of this complication, this gloomy outlook no longer obtains, although it must not be forgotten that it is serious.

Considering the laryngeal lesion, the most that physicians could hope to do twenty years ago was to relieve pain, and hope for euthanasia. Contrasted to this we now find a very different attitude among laryngologists and tuberculosis specialists. All admit that the situation demands careful, conservative judgment and united action on the part of physician and patient; but the records show that a gradually growing and gratifying percentage of cases do recover, and the well-authenticated cases of permanent cures are many.

A definite laryngeal prognosis is, however, very difficult. An early diagnosis, of course, is essential to a favorable prognosis. Other factors must be weighed,—age, stage of the pulmonary condition, general condition, digestion, other complications, extent of laryngeal involvement, progress of pulmonary condition, coöperation of the patient, general supervisory control, and the skill and experience of the laryngologist. The laryngeal prognosis depends on the sum total of the above factors.

CONCLUSIONS

1. Laryngeal tuberculosis is found in 10 per cent of incipient cases, in 21 per cent of moderately advanced cases, and in 42 per cent of far-advanced cases of pulmonary tuberculosis.

2. The percentage of improved larynges was twice as high in the moderately advanced (64 per cent) as it was in the far-advanced cases of pulmonary tuberculosis (35 per cent). In other words, the laryngeal prognosis varies directly with the extent of the pulmonary involvement.

3. The mortality within one year in incipient pulmonary tuberculosis with laryngeal involvement is three times as great (25 per cent) as is found in the same type of pulmonary cases without the laryngeal complication.

The mortality within one year, in moderately advanced pulmonary tuberculosis with laryngeal involvement, is twice as great (17 per cent) as is found in the same type of cases without the laryngeal complication (10 per cent).

In far-advanced pulmonary tuberculosis with the laryngeal complication, the mortality was 45 per cent, or but 12 per cent higher than in the same class of cases without the laryngeal involvement (33 per cent).

4. The laryngeal prognosis varies directly with a favorable or unfavorable general condition.

5. In cases with unimpaired digestion the percentage of unimproved larynges was 47, while in those with impaired digestion 73 per cent of the larynges were unimproved.

6. Intestinal tuberculosis occurring in cases of pulmonary and laryngeal tuberculosis gave a mortality of 74 per cent within one year ,and unimprovement in the larynx in 84 per cent of cases.

7. Involvement of the epiglottis or extensive involvement throughout the larynx, indicates a poor prognosis both as regards both life and probability of improving the laryngeal condition.

8. The improvement or lack of improvement in the larynx, if treated carefully, parallels closely (with exceptions) the improvement or lack of improvement in the lungs and general condition.

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DISCUSSION

Dr. J. G. Parsons (Sioux Falls): I did not discuss the paper of Dr. Hoagland, but I wish to congratulate him as well as Dr. Gregg on the splendid manner in which they have presented their subjects. Papers of this kind are important, and I imagine that general practitioners are wondering what good this is to them. It gives a ray of hope to many of these tubercular patients who formerly were denied it.

What is there in these papers, particularly the latter one, for a man who is running across these patients? I think the meat of the whole matter is the importance of making as early a diagnosis as possible in cases of this kind. It not infrequently happens that these

patients have delayed consulting a physician about an incipient tuberculosis until they get husky and cannot swallow very well. The lesson to be learned is that, when a patient presents himself with a husky voice and an irritative cough, which has not been diagnosed, he needs to be laryngoscoped and needs to be examined by a man who knows how to do this work, and I would rather favor the attitude which Dr. Hoagland takes in regard to the use of the simpler method of direct laryngoscopy in preference to the suspension method in the preliminary examination. It is not a difficult matter to use the Jackson laryngoscope and detect quite early some of these laryngeal conditions which otherwise might escape our notice.

The next point is, that these cases ought to be institutionalized. We have to consider this matter from a pragmatic point of view. It is very difficult to handle these cases even though we can hospitalize them. The ordinary hospital has not the facilities for treating and handling these cases properly. There must be rigid discipline and absolute insistence on refraining from any kind of speech at all. Holding them to a subdued whisper for the purpose of making known their absolute wants is essential.

And what is there left in for us laryngologists who are engaged in private practice? I believe our chief function is in the diagnosis of these cases and in the palliative treatment, rendering them comfortable, and, wherever it is possible for economic or other reasons, we should endeavor to get them institutionalized. This means we ought to have available at such an institution the services of an expert laryngologist, who can perform the different procedures which Dr. Gregg has shown from his valuable statistics are capable of producing amelioration and, to a considerable extent, a curative effect. The State ought to make some sort of provision so that there should be consulting laryngologists especially skilled in work of this kind, who can make these direct laryngoscopic palliative procedures for the removal of tuberculomata and the cauterizations and so on, which are necessary for the care of these patients.

The influence of the medical profession should be directed toward getting the Board of Charities to make the necessary expenditure of money for the relief of many of these patients and the possibility of arresting the process, which otherwise would not be possible without this kind of aid.

Another point that is valuable for the general practitioner to bear in mind is the necessity of maintaining the nutrition of these patients. The importance of this was clearly pointed out by the essayist. While there is ulceration of the epiglottis, the one best aid the patients have is taken away from them, and that is nutrition. They cannot do enough in the way of assimilation of food to enable them to hold their own, to say nothing about being able to make a fight against the disease which they are contending with.

A young man came to me with a husky voice. His physician wisely suspected tuberculosis of the larynx, and referred him to me for examination. He had the most beautiful tubercular larynx one could ask for. He had never had an examination. The radiograph showed his chest liberally riddled with tubercles. This man waited until he was about ready to die before he consulted a physician. He died inside of two months, due largely to the fact that he declined to do anything to help himself out. If that patient had been institutionalized early and had gotten a more cheerful point of view and gotten discipline, the possibilities are that his life might have been prolonged. The best we could do was to give him orthoform and palliative sprays.

Papers of this kind will enhance our interest in the general subject of tuberculosis and the possibilities of its relief.

Dr. Gregg (closing): Dr. Parsons spoke about the necessity of making laryngeal examinations in these cases. In Iowa they have been putting on a crusade against tuberculosis, and the state tuberculosis man who is there now, will not put on a clinic on tuberculosis unless he has a laryngologist to make an examination of the larynx in order that he can get at the prognosis much better and in order that he can advise them with regard to what they should do. Personally, I think every case of pulmonary tuberculosis should have a laryngeal examination. Twenty-two per cent of about five hundred cases of laryngeal tuberculosis had no symptoms pointing toward laryngeal lesions.

Another thing is this: A weak or sometimes husky voice may not be due to a laryngeal lesion at all. A tuberculous node in the mediastinum may cause pressure on the recurrent laryngeal nerve and give all the symptoms a patient gets with tuberculosis of the larynx, or it may be simply muscular weakness that we get in tuberculosis.

I want to straighten out the proposition of suspension laryngoscopy. I think Dr. Hoagland misunderstood me when I spoke of suspension laryngoscopy as a diagnostic aid. I have used it for diagnosis, but would not generally consider it necessary to do so unless a piece of tissue were to be removed for the pathologist's examination.

ABDOMINAL SURGERY IN INFANCY FROM THE PEDIATRIC VIEWPOINT*

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MINNEAPOLIS

Surgery in the infant presents some very especial problems which must be appreciated if the best results are to be obtained. Variations from surgery in the adult are not only quantitative, but also qualitative. In the infant we are dealing, not only with a smaller organism, but also

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with one presenting peculiarities. Some of the peculiarities to be noted are:

1. The infant's body differs from the adult's anatomically, histologically, and even chemically, the water content of the new-born being 75 per cent, as compared to 67 per cent in the adult.

2. It is an organism peculiarly susceptible to extreme metabolic disturbances, such as dehydration and acidosis.

3. It is an unstable organism, as evidenced by lack of temperature and central nervous control.

4. The infant possesses little resistance, and practically no immunity, to the infectious diseases.

As a result of these peculiarities there devolves upon the surgeon and the pediatrist especial responsibility as to early diagnosis; proper pre-operative, operative, and postoperative care.

I wish to discuss the subject from two viewpoints, namely:

a. Diagnosis.

b. Surgical care.

DIAGNOSIS

The general field of abdominal surgery is too broad for discussion, so that only some of the more frequent surgicial conditions illustrating the principles involved have been selected. I shall consider the following diseases: appendicitis, intussusception, and pyloric stenosis. The first two conditions are of the emergency type, while the third should not be dallied with for too long a time.

In the diagnosis of these disorders in the infant subtle difficulties are encountered. Reliable subjective symptoms are not obtainable. There is a complete lack of coöperation, if there is not active resistance, on the part of the patient during the physical examination, with consequent difficulty in interpreting the physicial findings. Pain in the infant manifested by crying, doubling up of the extremities, and unusual postures may betoken pneumonia, gas pains, pleurisy, earache, hunger, appendicitis, mechanical irritation, or pyelitis. The pain may arise from widely varying sources; the manifestation however may be similar. A suspected localization may prove misleading. A distended or hyperesthetic abdomen may be found in all these varied conditions. Therefore diagnosis is often arrived at by the process of exclusion, and no abdominal surgery should be undertaken until a complete physical examination has been made. Such examination should include inspection of throat and ears, careful percussion and auscultation of the chest, and a microscopical study of the urine. Laparotomies have been performed when the actual condition was pneumonia, pyelitis, or even otitis media. On the other hand, grave surgical conditions have gone undiagnosed, and were recognized only on the post-mortem table.

APPENDICITIS

Appendicitis in the infant, though not frequent, is certainly not a rarity. Abt[1] has collected eighty cases under two years of age. Howland[2] states that, although this disease is uncommon, it should be considered in every case of obscure illness in infants, and he remarks on the diagnostic difficuties. A definite chill is not seen; constipation or obstipation is usually present. Vomiting is constant. Rigidity is diagnostic, but one must be sure of its presence, and not mistake the tense abdominal wall of gas-distension or resistance from struggling. A point of tenderness may not be elicited, or, if found, it may occupy an unusual site. Gundobin's[3] finding of the appendix posterior to the cecum in 22 per cent of all cases, explains this peculiarity. Elevated temperature and leucocytosis furnish corroborative evidence. The progress of the disease is extremely rapid, rupture occurring early. Since the resistance and immunity are low, general peritonitis leads to a quickly fatal termination.

INTUSSUSCEPTION

Intussusception is preeminently a disease of infancy. In 293 cases collected by Pilz,[4] 158 occurred in the first year. Hess[5] studied 314 reported cases, and found 201 in the first year. Diagnosis is easy if a careful history is obtained and a study of the symptoms is made. The history, briefly, is this: A normal, well-developed infant, usually between four and twelve months of age, suddenly cries out with pain and goes into collapse. It recovers in a few minutes, and then follows vomiting and a copious, normally appearing bowel-movement. More or less regular cramp-like pains now follow, occurring at intervals of ten to twenty minutes, and lasting a minute or two. Between the pains the majority of little patients are happy, playful and do not appear ill. A very small percentage may continue in a state of collapse. Abbott[6] has called especial attention to the character and regularity of these pains. He has also emphasized the

importance of the posture assumed by the child. If left to itself on the bed during the pains it will assume the knee-chest position, and bore its head into the pillow. Vomiting may or may not continue. As a rule, within a few hours of the onset, clear blood or bloody mucus is discharged from the bowel. By this time a sausage-shaped tumor is often visible, and is always palpable through the abdominal wall. Many hours may pass before the mass is palpable by the rectum. We have found the fluoroscope of definite aid in the early diagnosis, and such a diagnosis is the one worth while. Laparotomy and manual reduction of the tumor is the only treatment.

PYLORIC STENOSIS

True hypertrophic pyloric stenosis is found only in infancy. Its recognition is easy with a careful history, study of the symptoms, and the use of the *x*-ray. The history is almost categorically that of a normal, thriving, breast-fed baby, between the ages of one and four weeks, being seized with progressive, projectile vomiting. Eventually, practically all food is vomited. Then follow obstipation, oliguresis, very rapid loss of weight and wasting. Inspection after feeding will reveal peristaltic waves traveling across the abdomen from left to right, and rarely the pyloric mass may be palpated. Pylorospasm and dyspepsia may cause some confusion, but in these conditions, though the symptoms may be similar, they are not so severe nor so constant as in stenosis. However, if a little barium is mixed with a few ounces of expressed breast milk and given to the child, a study of its progress with the *x*-ray will differentiate. In true stenosis the major portion of the barium may be seen in the stomach for five, six, eight, twelve, or even twenty-four hours after ingestion, with little, if any, barium shadow along the intestinal tract. In our experience a simple Ramsted[7] operation affords a cure if an early diagnosis has been made.

SURGICIAL CARE

This may be discussed in a general way, taking up some of the peculiar conditions arising in the infant.

1. Dehydration.

We have long known that from lack of food and water, or as a result of vomiting, purging, and diarrhea, a child will rapidly lose in weight and soon fall into a precarious state. Marriott[8] has shown that this is due primarily to a loss of body fluids. There result anhydremia and decrease of blood volume. He has shown that in dehydrated, anhydremic infants the blood volume may be reduced to as low as one-eighth the normal. It is evident, in such a case, that the blood flow will suffer like reduction,—for instance the flow of blood through the lungs will be reduced to one-eighth the normal. This results in suboxidation and the collection of acid products in the blood-stream, intoxication, or acidosis. This intoxication may be further increased by the products of disturbed metabolism resulting from a surgical disease and by the anesthetic. Loss of blood during the operation will further reduce the water level and blood volume. Prevention of this condition rests on guarding against water loss, the cure, on the restoration of body fluid to the normal level as quickly as possible.

In the light of these considerations pre-operative starvation and catharsis might prove disastrous. Rather should the surgeon, if possible, feed the child to within three hours of the operation, desist from the use of cathartics, and push fluids to the limit. This is especially true in the conditions under consideration, since vomiting is such a prominent symptom. Fluids in the form of normal saline or glucose solution should be given freely before operation. If fluids cannot be given by mouth, they should be administered per rectum, subcutaneously, intravenously, or into the peritoneal cavity. If the patient is extremely dehydrated, a combination of methods may be used; in any event see that the infant is well supplied with fluids before the surgical attack. Further post-operative starvation and withholding of fluids is a serious handicap. Suitable food should be given the moment the child can retain it, and the efforts to supply water should be continued after the operation.

2. Heat control.

The adult has an admirable heat control; little variation occurs in torrid and frigid climates. Such is not the case with the infant. Its heat control is poor. Variations from 90°F. to 108°F. have been observed, depending upon the surrounding temperatures. Chilling is conducive to shock. Is it any wonder that the infant surgery mortality runs high when one can so frequently see a tiny infant being tediously prepared for operation in a cold operating-room, lying on a metallic table, entirely exposed or worse still covered with cold, clammy sheets. The oper-

ating-room should be very warm, the infant surrounded with hot water bottles, and exposed as little as possible. Dissipation of heat is the more marked the longer the operatoin. In addition the shorter the operating time the less anesthetic is required, and this is not a negligible factor.

3. Loss of blood.

Loss of blood is of grave import to the infant. It produces shock, increases dehydration, debilitates the infant, and reduces its already scant immunity. Therefore especial precautions should be taken to render the operation as bloodless as possible.

4. Isolation.

The infant possesses practically no immunity to infection. It will contract whatever disease it is exposed to. Too often the surgeon is robbed of the friuts of careful, skillful operation by an ensuing upper respiratory infection, pneumonia, or exanthem contracted from some inmate of room or ward. But he often deserves such an outcome, for it results from ignorance or, more often, from carelessness. The little patient should never be placed in a ward with other patients old or young and subjected to ward care. It should be placed in a room where the most careful isolation is obtained and the best aseptic nursing practiced.

Some tenets of good infant surgery then may be summed up in the following rules:

1. Accurate, early diagnosis.

2. Good pre-operative care, which includes feeding, during the period if possible, desisting from drastic catharsis, and the forcing of fluids.

3. Skillful surgery, done as quickly as is consistent with safety, with as little trauma and loss of blood as is possible.

4. Conservation of the child's body heat during the operation.

5. Forcing of fluids immediately ofter the operation, and the administration of food as early as possible.

6. Complete isolation of the patient, and aseptic nursing during convalescence.

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DISCUSSION

DR. S. OFTEDAL (Fargo): Dr. Rodda has clearly emphasized the underlying principles that govern this specialty in surgery from both the diagnostic and the operative standpoint. I think we are all agreed that from the standpoint of the operator the two important underlying principles of safety are, first, the careful preoperative fortification of the patient, and, secondly, accuracy and celerity in the technic, which implies a minimum loss of blood and a minimum loss of time.

It seems to me that we should not leave this subject without touching on the possibility of the presence of Meckel's diverticulum. When we consider that Meckel's diverticulum is found in 2 per cent of all bodies examined, and that it is the cause of five to six per cent of all intestinal obstructions, its importance becomes obvious. Meckel's diverticulum is, in these cases, two or three inches long and may be the seat of a foreign body or of infection through the intestinal tract. It may even be the cause of invagination of the bowel or a kinking, especially if there is present a band of the obliterated omphalomesenteric duct joining the Meckel's diverticulum to the abdominal wall. The important factor in its recognition lies in the choice of the site for the incision. The condition may very closely simulate an acute appendicitis.

In regard to pyloric stenosis: I want to re-emphasize what Dr. Rodda said about the differences in the anatomical structures as between the infant and the adult. In the stenotic cases the pyloric wall is of a gelatinous consistency, which makes it very difficult to introduce sutures of any kind. It is now generally accepted, I think, that the Ramsted operation may be done without introducing any sutures whatever into the stomach wall—a great advantage of this operation.

A point that was not touched and in regard to which I desire to ask Dr. Rodda's opinion is local anesthesia. Some surgeons have gone so far as to declare that local anesthesia should never be used with the Ramsted operation. It seems to me that local anesthesia in a child of that age introduces a great many difficulties into the operation and also lengthens the procedure. In a case of my own, an infant of three weeks, the obstruction recurred at the end of four weeks, necessitating a secondary operation with a more extensive separation of the muscle toward the prepyloric region. Ether anesthesia was used in both instances and did not seem to influence the result in the least, the patient having made a complete and uneventful recovery.

DR. H. B. SWEETSER (Minneapolis): These children are usually under three months of age and frequently under six weeks. They do not need a prolonged ether anesthesia. I have seen a surgeon stand around until the patient was thoroughly anesthetized, with the result that it died almost as soon as taken from the table. These cases need very little anesthesia. If you block the line of incision with one-half of 1 per cent novocain solution you can open the abdomen with no pushing out of the contents. In pyloric stenosis with the Ramsted operation all you have to do is to cut the sphincter muscle and then you are through, and you can be through in four or five minutes. The mortality rate is very much less than that following gastro-enterostomy

because the time is very much less. When you give ether to a child and the anesthetizer sees that things are going badly, you can finish any kind of an operation without additional anesthesia, especially if the incision has been blocked with novocain.

Dr. E. P. Quain (Bismark): Acute pyelitis is, in my opinion, one of the most difficult things to differentiate from early acute appendicitis in children. It may begin suddenly with vomiting and even be associated with muscle spasm of the right abdomen. As a rule the deep tenderness is not so pronounced after a few hours as it would be in acute appendicitis. The leukocytosis, too, is not likely to be as high as in appendicitis although it may be above normal. A positive diagnosis can usually be made with the finding of pus or blood in the urine, but it should not be forgotten that there may be an obstruction to the outflow of urine from the affected side, and then there will be no pus present in the urine. In fact, the child that is suffering the most pronounced symptoms from acute pyelitis and in whom the diagnosis is almost likely to become confused with appendicitis, is the one in whom the ureter is obstructed and pyuria absent. It is possible, however, that the removal of the appendix may be beneficial even though pyelitis be the cause of the acute symptoms, for the lymphatic association between the pelvis of the kidney, the ureter, and the appendix is very close, and the source of infection in many instances of pyelitis is unquestionably appendiceal.

Dr. Rodda (closing): In regard to the use of local anesthesia: I am not in a position to judge, not being a surgeon; but I know that if a child is properly prepared for operation, not chilled on the operating-table and not drowned with ether, it stands the ether anesthesia exceedingly well.

Dr. Quain's remarks about pyelitis brings up for emphasis the point that one must be extremely careful in the diagnosis of an acute abdominal condition in infancy. The important thing is to realize that in dealing with an infant you are not only dealing with a small adult body, but you have many special problems, such as control of heat, the water level, and prevention of upper respiratory infections.

THE
JOURNAL-LANCET
Represents the Medical Profession of
Minnesota, North Dakota, South Dakota and Montana
The Official Journal of the
North Dakota and South Dakota State Medical Associations

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POURING OIL ON THE TROUBLED MEDICAL WATERS

We publish on another page the report of the Survey Committee of the Medical School of the University of Minnesota which was issued last month by the president. The newspaper accounts as compared with the original report varied somewhat and apparently someone had given a different impression to the newspapers from that the Committee intended to convey. Although this Committee may have intended to pour oil on the troubled waters, in doing it they evidently spilled a couple gallons of gasoline, for it produced a different reaction from what they manifestly expected. It may be compared to a flare-up or an explosion in a gasoline tank, with a subsequent conflagration, or something of that sort.

The Committee goes into detail, from a historical point of view, and its comments are quite the same as we have heard before. It praises the School, which everyone has done, and it speaks of the past splendid history and the service which the Medical School of the University of Minnesota has rendered. It speaks, also, of its high standard, which everyone knows. It takes great pains in going over the amalgamation of the Medical School of Minneapolis and the Mayo Foundation of the Mayo Clinic at Rochester. It evidently investigated the matter thoroughly, for it lays great stress upon the excellence of the Mayo Clinic and the Mayo Foundation, and their relation to the Medical School.

The Committee spent some days in Minneapolis, during which time it interviewed the Dean of the Medical School and the Dean of the Graduate School (at Rochester), the members of the faculty, and students. It also received a committee from the medical alumni and heard their criticisms, which were mainly the criticisms made a year ago at the annual luncheon, during the time the State Medical Society held its annual meeting. It refers, too, to the state of mind of the medical men of the Northwest regarding the Mayo affiliation and the Medical School. We had hoped this was past history, and was all settled, for it had been accepted by most of the University medical men of the Northwest, and this stirring up of old memories was, from our point of view, wholly unnecessary. It investigated, of course, all the conflicting views and smoothed them over as best it could.

The Committee also investigated the Dean of the Medical Faculty; and, judging from its comments it patted him affectionately on the back and placed a cake of ice on his chest, leaving him in a somewhat dazed condition and not knowing what they actually thought of him, except that they recommended that the Medical Faculty be permitted to select its own dean, which, if they had looked up the laws of the state, they would find cannot be done for the Regents alone are responsible for the election of the dean of every school or department in the University.

Dr. W. J. Mayo, as a member of the Board of Regents, was endorsed heartily, and the Mayo Foundation was looked upon as the greatest asset of any medical school in the world.

The Committee further commented upon the fact that the Fellows of the Graduate School may come from any first-class medical school in any part of the world, thus showing that the Graduate School is not limited to the students of the University of Minnesota. It discoursed upon the necessity of medical schools and their functions, and wound up by stating that a state medical school that is not in helpful sympathy and in touch with the medical profession of the state is, in the Committee's opinion, functioning badly.

To understand this report one should read it very carefully, and it is published in THE JOURNAL LANCET because it deals with some things that all physicians should know about.

The report finally summarized the findings of the Committee and recommeds—

First, that the Dean of the Medical School should be nominated by the Medical Faculty. (This we cannot comment upon, as it is out of the hands of the Medical Faculty).

Second, that the laboratory facilities, buildings, and equipment should be enlarged as quickly as possible. (The Medical Faculty has been trying to do this for a number of years, and have been able to accomplish nothing because they have had no money with which to carry out their purposes.)

Third, that the salaries of the Medical Faculty should be increased. (A very wise recommendation, if the University had the money.)

Fourth, that there is no reason for a full-time man to devote himself to clinical branches. (That fact is obvious, because it is impossible to obtain full-time men on the salary the University of Minnesota is obliged to pay.)

Fifth, that there be an enlarging of the University Hospital from two to four or five hundred beds. (This is a very wise recommendation, and if the Committee would come to Minnesota during the session of the legislature and talk to them about this, it might be accomplished. Past records show that the former Medical Faculty, who are responsible for the establishment of the University Hospital on the Campus, recommended from the start that a hospital of not less than five hundred or a thousand beds should be established. This is nothing new, nor is it a new recommendation.)

The sixth and seventh recommendations related to the administrative officers and the members of the Faculty and urged them to cooperate with practitioners throughout the state and build up practitioners for the state. This is ostensibly the chief function of the Medical School, and they have been have doing this for years before the report came out.

One thing that Minneapolis physicians resent is the attitude of the Committee toward the Minneapolis General Hospital, and there we must take decided issue with the member or members of the Committee who visited the Hospital.

It is reported that at ten o'clock the night previous the Superintendent of the General Hospital received word that the Committee would visit the institution between nine and ten the following morning. As a matter of fact, they arrived there between eight-fifteen and eight-thirty, and, after taking a running jump through the hospital and talking general medicine, hospital superintendents, and things that pertain to hospitals generally with the superintendent, they departed before nine o'clock. They were evidently not on a very serious tour of inspection and could have seen scarcely anything else than the wards, the plumbing, and the kitchen. They did not inquire as to the method of giving clinics, nor why clinics were not given at the Hospital, and they evidently based their opinion upon what had been told to them or what they had heard outside of the Hospital. They gathered, too, that the clinical facilities were not used for the benefit of the medical students. The men who know the facts know where the blame lies. If the medical students are not given advantages in the Minneapolis General Hospital it is not because there are not enough teaching men in the Faculty who are in attendance at the Minneapolis General Hospital. They offer all kinds of courses, and have submitted their offers to the Administrative Board of the Medical Faculty, yet students are not assigned to the General Hospital clinics. The fault, then, is not with the General Hospital nor with its University clinical professors, but with the Administrative Board of the faculty and there the blame must be placed.

The report of the investigation of the Minneapolis General Hospital was wholly uncalled for, and was manifestly out of place. If a man were detailed, in the Minneapolis General Hospital, to supervise the clinics given for the benefit of the medical students who were scheduled by the Administrative Board to attend them, and to instruct and teach the internes, of whom there are thirty in the Hospital, it would require the full time of one man—it would be no part-time or half-time service, but the whole-time service of one competent man, and that man should receive an adequate salary.

With these few exceptions to the report, we are fully satisfied with it because we have all made these recommendations time and time again.

LEARNING THE FRENCH LANGUAGE IN TWO WEEKS!

It can't be done. The writer was an early and eager victim of his own credulity when he left his own shores and sailed on a French boat for Havre. He acquired a set of books, self-instructing in kind, secured the services of an educated French woman, and went to work. He studied, wrote, recited, and plunged until he

had fairly successfully succeeded in being able to say "Oui" and "Merci" with a fairly accurate pronunciation. Then his elation led him into devious paths, and filled him with false enthusiasm, hope, and courage, until he felt he was an accomplished French scholar. He went about the deck of the ship with a few French words at his tongue's end, and felt that they were firmly lodged in his brain cells. In spite of his strutting manner he felt occasionally, only occasionally, misgivings of his power to acquire a foreign language, and those misgivings came to him when his table waiter or deck steward, or the promenaders in passing, spoke in a wholly foreign tongue! This little setback did not disturb his equanimity, and he pursued his onward course.

The mental and linguistic exercise continued until he was complimented on his accent; then his enthusiasm and confidence knew no bounds, and he felt himself firmly seated in a foreign-language saddle built for one. He persevered, not with the same feeling of elation, for he felt he had the language world by the tail anyhow (like the proverbial deacon in his Sunday clothes who undertook to lead a calf by the tail; the calf ran and the man shouted for someone to help him let go). Alas, why did he ever take this language "calf" tailwise! Better, far, to have looked the calf firmly in the face and accepted the consequences. Never mind the simile. The foolish man grew in his own estimation and pride until he began to comment on the strange method of pronouncing French words. Why in the world did they put in so many letters and then fail to use them. A word of a dozen vowels and consonants was pronounced by chopping it in two in the middle and using only the first half. Why not use the whole thing? But his instructor said it was not being done in France.

However, the plodding work continued until he came across the word "assiette," and he naturally thought it meant a sitting-down process,—but not at all: it meant a *plate!* It seemed incredible, but it was true. Other words distressed him similarly. The journey was nearing its end, and the custom house loomed up at Havre, and with that *sangfroid* of a pompous American he stepped on the gangplank only to be met by a Frenchman who spoke to him in French! What in the world was that man talking about, and what did he want? Reason helped none, and experience in French studies not in the slightest. He was in a foreign land and heard a foreign tongue addressing him, eloquently, vigorously, vehemently, and with many movements of the arms and legs. The American was dumfounded, and put down his bags; the native picked them up and carried them. That was what the conversation was about, but the American did not know!

This little incident was trifling compared to the one experienced at Narbonne, in Southern France. The party was journeying from Barcelona, Spain, to Marseilles by train. One must change care only four times in going that distance, in six or eight hours, but each time one changes a train he must see to his bags and, incidentally, a Spanish and a French customs house. These are not pleasant experience to relate, but at Narbonne, while some of the party were changing trains and bags, the Editor was left in charge of three of the largest and heaviest;and as he and a porter were attempting the transfer to the other train, it, with the rest of the party on board, went on, leaving the lonely man "holding the bag!" There in Narbonne, a strange city in a foreign land and a man who hoped he could speak French! How the mighty had fallen in his own estimation. It needed this little jolt to show how large the world is, and how small the individual, even an editor. There was not a soul about that place who could speak a word of English, and but one soul who could talk no French. Can you conceive it? At all events, the stranger hunted up an official who could write figures, and by comparing time tables it was found that a train left Narbonne at 7:15 P. M., stopping at Cette at 9:45 P. M., and leaving there at midnight by changing cars again. This time the traveler hired two women who bundled his bags and him into the right car, and a few francs made the three happy. No sleep; only watching bags, as the change of trains had to be made at 3:25 A. M., boarding another at 3:45 A. M. This was the last change before reaching his destination, which was accomplished twelve hours after his friends had arrived. The compensation lay in the fact that it was cooler to travel by night, while the rest of the party stifled in Marseilles.

If you want to learn a language in two weeks, don't try! Go it blind, have a handful of coin of the country, and the world is yours.

The Editor's opinion of the origin of the French language is this: In centuries gone by an ape man roamed the country alone, as he thought, and while he was shouting gutteral

sounds and waving his arms, and perhaps his tail, he met a maiden ape who carried a gourd containing wine (accidentally discovered by the maid). The man drank, talked, and sang in his efforts to communicate with the girl. Of course he succeeded,—and thus arose the still prevalent triad, "Wine, Women, and Song." Also, the basis of language was outlined, not necessarily French, but likely, and all other tongues. Far be it, however, from us to criticize the French language, for we know the French think the English language a very queer one, and they are right. Each man to his own; but for his own benefit and advancement every man must acquire a knowledge of French, as it is one language to be depended upon over the entire foreign world.

PUBLIC HEALTH EXHIBIT AT THE MINNESOTA STATE FAIR

The work being accomplished by the public health agencies of Minnesota, especially of the Twin Cities, was effectively illustrated at the Minnesota State fair by exhibits housed in the building which last year was set aside for this purpose by the Fair Board. The exhibits this year were set up under supervision of the newly created public-health department of the Fair Board,—the first public-health department to be instituted by any state fair board in the United States.

Of popular educational value in calling attention to the importance of disease-prevention were the microscopes provided by the State Board of Health through which fair visitors looked at the germs of the more common communicable diseases. Sample packages of various serums and vaccines were distributed. The campaign against tuberculosis was stressed by the Minnesota Public Health Association, the Hennepin County Tuberculosis Association, and the Ramsey County Public Health Association in a series of attractive exhibits. Nutritional work for children, the activities of the Twin City visiting, industrial and school nurses, and the rural nurses of the state, a suggested model sanitation system for a typical small city, and the work being done for neuropathic ex-service men, were other items featured in the exhibits, which were well worth seeing.

MISCELLANY

SURVEY COMMITTEE REPORT ON THE MEDICAL SCHOOL THE UNIVERSITY OF MINNESOTA

FOREWORD

The rapid development of medical science in recent years has involved a corresponding increase in the complexity and cost of medical education in the University of Minnesota as elsewhere. The problems arising in this connection have included: (a) the provision of necessary laboratories and staffs for the various fundamental medical sciences; (b) the provision of adequate hospital facilities and clinical staffs, including the University Hospital and affiliated city hospitals in Minneapolis and St. Paul; (c) the development of graduate work in Medicine. To aid in such development the Mayo Foundation for medical Education and Research was created.

The University of Minnesota has endeavored to promote medical education along all these lines. Its pioneer work in the solution of some of the corresponding problems, however, has in some cases revealed differences of opinion as to which are the best methods, and has occasioned specific criticism by some of the medical alumni. Since most of the questions involved are of general interest and of fundamental importance, it seemed that a comprehensive survey of the medical situation at Minnesota by distinquished and disinterested representatives of the medical profession might be of service both here and elsewhere. The appointment of a special survey committee for this purpose was therefore authorized by the Board of Regents on January 6, 1921.

The personnel of the Committee appointed consisted of Dr. Frank Billings, professor of medicine in Rush Medical College, Chicago, Illinois, Dr. J. M. T. Finney, clinical professor of surgery in the Medical School of Johns Hopkins University, Baltimore, Maryland; and Dr. V. C. Vaughan, dean of the Medical School of the University of Michigan, Ann Harbor, Michigan.

The Committee made a comprehensive investigation, and after several weeks of study and conference submitted a report which is herein published. Upon receipt of this report the Board of Regents adopted the following resolution:

The report of the special Committee, consisting of Dr. Frank Billings of Chicago, Dr. V. C. Vaughn, of the University of Michigan, and Dr. J. M. T. Finney of Baltimore, Maryland, appointed by the Board of Regents upon the Medical School, was received, considered, and ordered filed supplement to the minutes, page 275. Subject to the definitions of its powers and duties by the laws of the State, the principles set forth for the development of the Medical School were adopted by the Board of Regents as the general policy it would follow hereafter in the conduct of the Medical School.

REPORT OF THE COMMITTEE

Mr. L. D. Coffman, President,
University of Minnesota,
Minneapolis, Minn.

Dear Sir:

The undersigned Committee, appointed by you to make a survey of the present organization and administration of the School of Medicine of the University of Minnesota and of the Mayo Foundation and to advise you and the Board of Regents of the conditions found, and to suggest a feasible plan for the future conduct of these agencies devoted to medical education, begs leave to present herewith its report:

Present standing of the school.—The Committee recognizes and is impressed with the excellent reputation of the Medical School of the University of Minnesota, which it has earned during its existence by the adherence to a policy of high standards of teaching and training of the medical students of the great Northwest. The members of the faculty, both in laboratory and clinical branches, have made important contributions to medical knowledge. The graduates of the School have demonstrated the excellence and efficiency of the training which they have received in the School by the high positions which many of them have already taken in the profession of this country. Among other significant achievement made by this school, is the fact that it has been able to unify medical education in the state. Your Committee is impressed with the need of the preservation of the high ideals of the Medical School and shall endeavor to follow principles and policies in making this report which will enable the School to continue upon a high plane educationally and which shall be in keeping with the past splendid history and service which the Medical School at the University of Minnesota has rendered. The fact that there are more applicants for each entering class than can be accepted and that it has been found necessary to set a limit to the yearly matriculates, shows the high regard with which the School is held by the prospective medical student. On this point your Committee desires to say that, in view of the increasing demand for competent medical men throughout the country, every effort should be made to provide for a larger number of students in this School.

Investigation.—Your Committee has made a painstaking and comprehensive survey of the Medical School at Minneapolis and of the Mayo Foundation and the Mayo Clinic at Rochester. A conference with the Board of Regents, in which the majority of this Board participated, was granted. The Committee found that the Regents individually and collectively, have an intelligent understanding of the importance of the Medical School, its service to the University as a whole and to the people of the state and its needs along both laboratory and clinical lines. The members of the Board are clearly desirous of developing the School along lines consistent with modern medicine and expressed a willingness to adopt a constructive program for the reorganization of the Medical School, and strongly urged your Committee to point out the way in which the effectiveness of the School might be increased. Your Committee spent some days in Minneapolis, during which time it interviewed the Dean of the Medical School, the Dean of the Graduate School, members of the medical faculty, and students. The Committee had a long session with a committee representing the medical alumni, heard their criticisms of the School, and was furnished with written reports made from time to time by the alumni. Your Committee notified any and all medical men in Minneapolis and St. Paul who might have any comment to make on the administration and conduct of the School, to appear before the Committee and to express themselves unreservedly; in short, your Committee attempted, and largely succeeded in giving a hearing to everyone who was willing to testify concerning any and all matters coming within the scope of the investigation. In doing this, the Committee was able to obtain the views not only of present members of the medical faculty, but of some of those who in a previous organization of the School found themselves left in the discard.

Your Committee visited the laboratories and clinics of the Medical School, including the University Hospital, the Minneapolis General Hospital, and the St. Paul City and County Hospital. In these institutions special attention was given to the facilities for instruction of students in the laboratories and clinics and the way in which these facilities are being utilized.

After studying the plans at Minneapolis and St. Paul, their operation and utilization by the School, your Committee proceeded to Rochester, where a like investigation was made of the Mayo Foundation, its relatoin to the Mayo Clinic on the one hand and to the University of Minnesota on the other. At Rochester, the Committee had a long session with Dr. William J. Mayo and the heads of departments in both the Foundation and the Clinic. The Committee was furnished with a copy of the terms upon which the affiliation between the Mayo Foundation and the University was made. The Committee visited and familiarized itself with the various lines of research work being carried out in the Mayo Foundation.

The Committee desires to state that in all its investigations, both at Minneapolis and at Rochester, it found everywhere the doors of inquiry thrown wide open, and every request for information made by the Committee was granted without hesitation and without reserve. The Committee feels that from these surveys, interviews, and printed reports it has obtained a fair knowledge of the past and present conditions pertaining to medical education at Minneapolis and at Rochester.

Conflicting views.—As was to be expected, the Committee found a great variety of opinions and marked variations in statement among those interviewed. Some of these differences are easily and naturally explained. When the medical schools in Minnesota were merged into one, quite naturally provision could not be made on the faculty list for all those who had formerly been members of the teaching forces in the combined schools. Necessarily, some men were dropped in the reorganization of the faculty of the University Medical School. Among those who found themselves in the discard were some who had long and faithfully served the University without remuneration. Quite naturally, these men, their friends and admirers, have had since that time, and continue to have, some ill feeling towards the Medical School. It was not difficult for the Committee to find among the ashes of the history of the School some still glowing coals that time only can extinguish. It is unnecessary to say that your Committee is powerless to deal with animosities due to this cause.

They should be forgotten and the time will soon come when they will no longer disturb the School.

Unfortunately, the affiliation of the Mayo Foundation with the University did not at the time it was proposed meet with the approbation of all. Members of the medical faculty, administrative officers of the University, and alumni, were divided on this matter. Some honestly thought that it was not the part of wisdom for a state university to affiliate with a privately organized institution. This also is an accomplished fact. Again, your Committee is powerless to undo what has already been done. The Committee will express its opinion concerning the value of the Mayo Foundation to the University later on in this report.

The Dean.—Some members of the faculty and some of the alumni think that a dean of a medical school should be a graduate in medicine, and argue that because the present Dean is not a medical man he is unfit to serve as Dean of the Medical School. The Committee found no one who questioned the ability, the honesty, or the devotion to his work of the present Dean. Your Committee does not concur in the statement made by some of the individuals with whom the Committee conferred, that a clinical teacher only is qualified, by that fact, to efficiently fill the position of dean of the medical school. The Committee believes that the character of the man is the most important of all the factors which qualify one for a deanship. The Committee is decidedly of the opinion that the dean of a medical school should be selected and nominated by the medical faculty. The Board of Regents that fails to recognize this important fact is, in the opinion of your Committee, ignorant of human psychology. Men who are competent to be members of a medical faculty are willing to follow a leader selected by themselves, but do most strenously object to serving a master appointed over them by someone else. A medical faculty that can not select its own dean is already impregnated with the seeds of dissolution. The Committee is strongly of the opinion that, while Dean Lyon is able, honest, conscientious, and just in his dealings with his faculty on the one hand and with the President and the Board of Regents on the other the faculty should be asked to nominate its own dean. In the world of medical education, Dean Lyon occupies a position of leadership. In the national conference on medical education, in the Association of American Medical Colleges, and in various other educational bodies, Dean Lyon is prominent and his opinions have great weight. However, it is not a function of your Committee to insist that the present dean be retained or someone else be selected for this important office. In the opinion of your Committee, the duty of selecting a dean should be entrusted to the medical faculty.

Dr. Mayo as a Regent.—Some of those interviewed by your Committee criticised the continuance of Dr. William J. Mayo as a member of the Board of Regents, inasmuch as in the capacity of Regent he must deal with an institution through which he is closely connected by the Mayo Foundation. The Committee has given attention to this criticism. It has questioned the President of the University and other members of the Board of Regents, and has sought from many and varied sources for evidence that Dr. Mayo has been biased in any act of his as a Regent by his connection with the Mayo Foundation. The Committee has been unable to find the slightest evidence that Dr. Mayo's interest in the Mayo Foundation has in any way biased his action or impaired his fitness as a Regent. The Committee is of the opinion that the presence of Dr. William J. Mayo on the Board of Regents has not been and is not now characterized by any action on his part derogatory to the development of the Medical School of the University or of the best interest of the medical profession and of the general public of Minnesota. The testimony of his fellow members of the Board indicates that Dr. Mayo has acted upon all subjects brought before the Board in a manner characterized by breadth of mind, individual unselfishness, excellent judgment, and with the unquestioned motive of improvement of the service of the University to the community. Your Committee regards the presence of Dr. Mayo on the Board of Regents as an asset to the Medical School and to the medical profession of the State.

Mayo Foundation.—The Mayo Foundation is affiliated with, or is a department of, the Graduate School of the University of Minnesota, and is quite apart from the undergraduate Medical School of the same University. This is an arrangement which is sanctioned and practiced by most of the leading universities of this country. All graduate work, whether it be in medicine, philology, history, or what not, is administratively under the control of the Graduate School of the University, Moreover, the Mayo Foundation does not limit the selection of its fellows to graduates of the University of Minnesota, nor, so far as we know, does it give any special preference to these students over those who graduate at other medical schools; in short, the Mayo Foundation, a branch or department of the Graduate School of the University of Minnesota, is open to the reception of fellows from any first-class medical school in any part of the world. In the opinion of your Committee, the University of Minnesota possesses in the Mayo Foundation an asset which is not equaled in any other university in the world. Your Committee wishes to avoid every form of exaggeration, but if there be anywhere a graduate medical school comparable in all its details with the Mayo Foundation, your Committee does not know its existence. While the Mayo Foundation is not administratively connected with the undergraduate Medical School of the University, the association of the two in the same university is of benefit to both. Fellows in the Foundation who find themselves without adequate preparation in some fundamental subject may go to the undergraduate School and profit by studies in its laboratories. Other fellows from the Foundation may be used as teaching assistants in the undergraduate Medical School. However, the mutual services that the Foundation and the undergraduate Medical School may render one to the other are matters of detail which may be worked out and modified from time to time by those in control of the two schools.

The purpose and functions of a state medical school.—At this point your Committee wishes to state briefly its opinion concerning the purposes and functions of a state medical school. The question of supporting a state university, including its professional schools, by a tax levied on all property within the state, is one which should be clearly understood. Taxation for the support of primary and even of secondary schools, is admitted by all as a wise and just procedure. Elementary education is generally admitted to be essential to

intelligent citizenship. When the masses of the people can not read or write, or fail to justly estimate the value of what they do read and write, many are likely to be led into political vagaries which might wreck any nation. It is regarded as legitimate, even in a democracy, to restrict the right to vote to those who are qualified to reach independent and intelligent conclusions concerning the questions upon which they vote. Upon this basic principle the states of our union not only supply the opportunity for a primary education to all, but attempt to make the acquisition of this fundamental qualification of citizenship compulsory. But when the state taxes all its citizens to supoprt its University, and especially its professional schools, we must take a new viewpoint in order to justify such a procedure. The State of Minnesota taxes all its citizens in order to make a few competent teachers, lawyers, physicians, etc. It might as well be asked whether this is just and wise. Should all the property in this state be taxed in order that a few be trained as physicians? The State of Minnesota has provided professional training in its University in pedagogy, law, medicine, engineering, and along other vocational lines for the few who may profit thereby in order that these may serve the masses of its citizens. The University of Minnesota does not exist and function and is not supported in order to secure for its graduates an easy living. The state recognizes the fact that its citizens need intelligent teachers who will instruct the thousand of its children in all the school grades in useful knowledge. The state needs lawyers who will enact in its legislature wise laws and secure their proper and impartial administration in its courts among all classes and conditions of men. The state needs honest and skillful engineers who will drain the swamps, build water-works, provide sewers in the cities, construct roads and bridges for the better transportation of the products of farm and factory. It needs physicians who will utilize the knowledge gained both in the prevention and the cure of disease. Each graduate of a state medical school is a heavy debtor to the state and unless he fully realizes this he will not have the right attitude towards his life work. Those who organize and arrange for the work of a state medical school must not forget the tradesman, the farmer, the blacksmith, and others, whose annual contributions to the tax roll make the university education possible. The state medical school that is not attempting to supply all the citizens of the state, not only those in dense cities, but those in rural communities, with competent physicians, is failing to function properly. The state medical school that is not in helpful sympathy and touch with the medical profession of the state is, in your Committee's opinion, functioning badly. Some of the important functions of a state medical school may be briefly stated as follows:

1. To extend the bounds of knowledge in both preventive and curative medicine.

2. To impart useful knowledeg, both new and old, along the lines of preventive and curative medicine to its student.

3. To instruct its student in the best methodss of applying the knowledge imparted to them in the prevention and cure of disease.

4. To make demonstration of the benefits of medicine by the treatment of patients assigned to its hospitals.

Enlightened nations have long recognized that the man who makes a discovery, the application of which is beneficial to his fellow men, is deserving of a reward In some instances this expression of gratitude has taken the form of a financial grant, while in others it has been expressed by conferring upon the discoverer some high honor. The English Parliament liberally rewarded Edward Jenner for his discovery of vaccination for smallpox, and the American Congress expressed its gratitude to Walter Reed for his discovery of the mode of transmission of yellow fever. The title and pay of the Surgeon General was changed from a brigadier to a major-generalship when conferred upon General Gorgas in recognition of his work in ridding the canal zone of yellow fever and malaria; in short, an enlightened state recognizes its duty in the support of scientific investigations, especially those who lessen disease and prolong life. The maintenance of laboratories, both for research and teaching purposes, in our state medical schools will not be questioned by any intelligent citizen. Such laboratories should be abundantly equipped and well manned, and their functions for research and teaching purposes should be plainly understood. No intelligent citizen will object to the expenditure of any reasonable amount of money for these purposes. That the teaching in the Medical School should be thorough and modern no one will question. The same is true concerning the benefits conferred upon those who are treated in the University Hospital. The task that lies before your Committee, as understood by its individual members, is to present to you its opinion as to how the Medical School of the University of Minnesota may best function, may widen the bounds of knowledge, may most successfully teach its students, and may utilize its Hospital facilities not only in the instruction of its students, but for the benefit of those who are treated in the Hospital.

The Laboratories of the University Medical School.—Much valuable work has already been accomplished in the laboratories of this school. For both research and teaching purposes they need to be expanded, to be furnished with larger facilities, and to be supported more liberally in salaries paid to the workers. It is hardly within the range of your Committee's work to enter into specifications along these lines. The needs of the laboratories are plainly seen and the requests of the men at work done in them should have a sympathetic hearing. The nature of the work done by the laboratory men necessitates that they give practically their full time to it. Their salaries constitute, for the most of them at least, their entire income and they should not be provided niggardly. When the present laboratories were built it was recognized that some of them at least were incomplete, both in space and in equipment provided. The workers in these laboratories were given to understand that their present quarters were only the beginning and that their completion would be speedily provided for. The delay in these expectations has quite naturally given rise to a sense of disappointment. The University Medical School of Minnesota has made a splendid start in the construction and equipment of its laboratories, but further provision along these lines is demanded if the School is to continue where it now stands, especially in its laboratory branches, in the first rank of medical schools in this country.

The clinical branches.—Your Committee will first express its opinion concerning the clinical facilities,

hospitals and hospital teaching as they now exist and are utilized in Minneapolis and St. Paul. The University Hospital on the campus at Minneapolis seems to be serving its purpose admirably, so far as its capacity admits, but it is too small. The Committee finds that in the main the undergraduate medical curriculum is well arranged for the training and education of students to become general practitioners,—the chief function of a medical school. The lack of a sufficient amount of clinical material on the campus either in the out-patient department or in the Hospital, is at present a serious hindrance to complete and satisfactory clinical instruction and training of the student body. In the opinion of your Committee, the University Hospital should be enlarged so as to furnish approximately four or five hundred beds. The Committee feels that with the number of students as running at present, approximately four or five hundred beds and an out-patient department with the required room and equipment to establish a diagnostic clinic on the campus would furnish adequate facilities for all undergraduate teaching. A larger hospital is, in the opinion of your Committee, not desirable, at present at least. The maintenance of a hospital at the present time is expensive and it would be easily possible to build a University Hospital which would be a burden to the University and the maintenance of which would be so costly that the laboratories would necessarily receive inadequate support. In the opinion of your Committee, the University Hospital should be open to those patients who may be sent to this institution under the provisions of the laws of the state. In the opinion of your Committee, such patients should always have preference in admisison to the University Hospital. This Hospital might also be utilized, if there be no other provision for the care of sick University students. The University Hospital should also be open to patients brought or sent to it by practitioners in the state. The University Hospital has a splendid opportunity to aid the physicians of the state in the diagnosis and treatment of cases in which the physician in charge needs advice or help. Under no circumstances, in the opinion of your Committee, should patients be admitted to the University Hospital without the approval of the physician who has charge of them. There must be no competition between the University Hospital and the private practitioner; on the contrary, the University Hospital should be helpful to the private practitioner, should aid him in the diagnosis of his cases, and advise him in regard to their treatment.

The question of the admission of pay patients into the University Hospital is a perplexing one, and about which your Committee hesistates to express a decided opinion. The Hospital expenditure for the indigent should be paid by the state or by the county from which they come. Some of this class may come from the state institutions, while others may be sent directly from their homes by county commissioners of the poor, by judges of the probate court, or by some other county official designated by the law of the state. Any legally qualified physician in the state should have the privilege of bringing or sending to the Hospital any private patient if he desires to do so. Patients of this class may be sent to the University Hospital for diagnosis alone, or for diagnosis and treatment, but in all cases it should be understood that they remain the patients of the physician sending them to the hospital. Patients of this class vary greatly in their financial ability to pay. Some can easily pay a per diem covering hospital expense, but are unable to pay more. This class is a large one. Many belonging to it are on the verge of pauperism, but in the University Hospital they may be relieved of their disabilities and returned to their homes as self-supporting, self-respecting individuals. Others might easily pay a consultation fee or a fee for treatment if the family physician desires the patient to receive treatment, and if such fees are accepted they should be regulated by the fees ordinarily charged by consulting physicians and surgeons of standing in Minneapolis and St. Paul. The Universitty Hospital certainly should not under-bid private physicians in rendering medical and surgical or consulation service, nor should the University Hospital exceed in its charges those generally demanded by first-class consultants. Any accumulation of money from such fees, which, in your Committee's opinion, will always be small, might be legitimately used to improve hospital facilities or to reduce any expense incurred in conducting the clinics. In no case and under no circumstances should the salary of a teacher in the Medical School be determined by the consulation or other fees that patients coming under his charge may pay. A state university is an educational and not a commercial institution and the members of its faculty through all the grades should be educators and not promoters.

Your Committee visited the Minneapolis General Hospital, where certain clinical instruction is given to the students of the Medical School. On reaching the hospital the Committee was informed that it was not customary among the members of the hospital staff who were supposed to give instruction to students from the University, to have a definite hour of the day for visiting the hospital to meet with and instruct the students. If this be true, and it seemed to be true on the morning your Committee visited this hospital, the instruction furnished medical students in this institution can be of little value. There is splendid opportunity for clinical teaching at the Minneapolis General Hospital and this institution should be utilized for teaching purposes.

Your committee visited the City and County Hospital at St. Paul, in which institution students from the University Medical School reside for a time and receive instruction. The provision for this instruction at the St. Paul City and County Hospital seemed to your Committee to be much superior to that provided for at the Minneapolis General Hospital. Your Committee was favorably impressed with the work being done in the St. Paul City and County Hospital, and believes that this institution is a valuable adjunct to the teaching facilities of the University as utilized by undergraduate students and by internes. Your Committee sees no reason why other hospitals in Minneapolis and St. Paul might not be used to some extent, at least, in the clinical instruction of senior students in the Medical School. However, the Committee believes that a clinical service in any hospital in order to be of real value to the student must provide for visits at fixed hours.

With a University Hospital of approximately four to five hundred beds, with every patient utilized for teaching purposes, and with the services in other hospitals in Minneapolis and St. Paul properly provided for, the

Medical School of the University of Minnesota may have an abundance and variety of clinical material ample for all its needs in the near future.

Full-time and part-time clinical teachers.—This is a matter which has been the subject of much discussion and some experimentation in various medical schools in this country. Your Committee is decidedly of the opinion that at the present time the clinical facilities in the University Hospital do not justify the employment of full-time clinical teachers. The present facilities may justify full-time service of a limited number of assistants or even of associates, but even for these the present opportunities for clinical experience and investigation are not sufficient to attract qualified young men to accept positions which afford so little now, or promise so little in the immediate future. The time may come, when a large University Hospital is secured, that the clinical facilities and opportunities for research work may justify the University in considering the adoption of full-time clinical teaching; but your Committee advises that the School go slow in this direction. There are clinical men who are sufficiently devoted to scientific investigation, who are willing to accept the same standard of living as that adopted by laboratory teachers and who will devote their whole time to clinical teaching and research. When such men are found it will not be necessary to bind them by a strict contract to work so many hours or to give full time, half time, or any part of their time. These men do the work because they love it more than they do the luxuries which greater incomes can secure. After all, it is the man and not the contract which is of the greater importance to the institution which one serves.

Graduate instruction.—In the opinion of your Committee the important function and reason for being of a state medical school is the preparation of general practitioners of medicine. Everything else should be incidental to this. There is no objection to permitting unusually well-qualified students continuing as research fellows in the laboratories and as teaching clinicians in the clinical branches and thus secure graduate instruction, but in the opinion of your Committee, this should be incidental to the main work of the Medical School. In every class there will be found a few unusually bright and ambitious young men who will give one or more years to advanced study, but the main concern to the Medical School is not with these, who will always take care of themselves, but with the mass of the students who should be prepared to go out and directly serve the people of the state. Your Committee is strongly of the opinion that the Medical School at Minneapolis should not attempt to devote any large portion of its energies to the development of a graduate medical school at Minneapolis. The University of Minnesota has already at Rochester the greatest graduate school in the world.

Duties of the State medical school towards the general practitioners of the state.—Your Committee desires to emphasize the fact that both the science and art of medicine are never in a stable, but always in a labile, state; therefore, the duty of the state medical school does not cease with the graduation of its students. Next to the making of well-equipped physicians, is the function of enabling these men to keep up with the ever changing, ever progressing movements of modern medicine. The laboratories of the University Medical School should always be open to any practitioner in the state who wishes to come and to bring himself up abreast of the most recent advancement in any medical work. The diagnosis clinics should likewise always be open to visiting physicians, who should be encouraged and helped in their attempts to acquaint themselves with the most advanced methods. The Medical School is a shop which manufacturers and distributes a product—an implement, as it were, which is necessary in the advancement of civilization, and the maker of this implement should be ready at all times to remedy any defects which it may show, to sharpen its blades which may have grown dull in service, and to improve it every possible way. The state supports the Medical School in order that its graduates may serve the people, and the School should not neglect the graduates which it is sending out to aid the people

Practitioners' review courses.—The Minneapolis General, the St. Paul City and County, and other hospitals in the Twin Cities have an abundance of clinical material and available laboratories which afford excellent facilities for short review for practitioners. The University may be able to arrange such courses with the coöperation of the medical profession of Minneapolis and St. Paul.

SUMMARY

Your Committee summarizes its recommendations as follows:

1. The Dean of the Medical School should be nominated by the medical faculty for appointment by the Board of Regents, heads of all departments in the Medical School having votes in this selection.

2. The laboratory facilities, buildings, and equipment should be enlarged as quickly as possible. Your Committee is not prepared to speak concerning the details of this recommendation. They can safely be left to the laboratory men.

3. The salaries of the laboratory men should be increased.

4. There is no reason why the heads of clinical branches should at present be made full-time men. Certain associates and assistants in the clinical branches might very properly be made full-time workers.

5. An enlargement of the University Hospital to make approximately from four to five hundred beds should be secured.

6. The administrative officers and members of the faculty of the Medical School of the University of Minnesota should, in the opinion of your Committee, recognize the fact that the chief function of this School is to supply the state with general practitioners of medicine.

7. Every effort should be made by the administrative officers and the faculty to coöperate with and assist the practitioners of the state in furnishing them with opportunities for refreshing their knowledge in both laboratory and clinical branches and by helping them in the diagnosis and treatment of their cases.

FRANK BILLINGS
J. M. T. FINNEY
VICTOR C. VAUGHAN

POLIOMYELITIS IN MINNESOTA—ITS AFTER-CARE, AND A WARNING

From Division of Preventable Diseases, State Board of Health, University Campus, Minneapolis

Early in June Sebeka and Menanga physicians called the attention of the State Board of Health of Minnesota to an outbreak in and about Sebeka, Wadena County, which was first thought to be cerebrospinal meningitis. As a rule, the onset was sudden, temperature 103°-105°, rapid pulse, headache, vertigo, pain in legs, and in many cases, stiff neck which varied from slight stiffness to retraction. Vomiting and constipation occurred in the majority of cases; epistaxis frequent and often first pronounced symptom. In some cases sore throat was present, and both drowsiness and restlessness were common. The Kernig sign was present in all cases, and Brudzinski's sign in all severe cases; knee reflexes, irregular, increased, decreased, or normal. While muscular tenderness was the rule, it was not found in all cases. In some cases the head was retracted, thighs and legs flexed, forearms and fingers flexed.

In more than forty spinal fluids from these early cases no meningococci were found. Most fluids were clear or but slightly turbid. A few were markedly turbid, but did not present the usual appearance of epidemic meningitis fluid. In a few instances only was it possible to make the cell count in the field. When made, an increase in cell count was found.

The early cases presenting meningeal symptoms did not appear as sick as the usual epidemic meningitis cases, and most of them recovered after but four or five days' illness.

A recent review of some of the early cases by our own epidemiologists, together with a special investigator from the Neurological Department of the University of Minnesota, has given valuable information. In approximately 50 per cent of cases reviewed in which no muscular impairment was at first observed, there has resulted some anomalous condition which agrees with a diagnosis of poliomyelitis infection in these cases. The late findings have consisted of lowered or absent reflexes in one or more members, loss of muscle tone, and, in a small number of cases, noticeable muscular atrophy.

Soon after the beginning of this outbreak, cases occurred which were frank cases of poliomyelitis. These were associated with the cases above described and it was found that there had been present in this community for some time many cases of acute illness of indefinite character, many presenting digestive disturbances, sore throat, etc. In families where a frank case of poliomyelitis occurred, information would be obtained that all the other members of the family had been ill with similar symptoms except that there was no definite muscular involvement, although prostration was often quite marked.

A careful clinical study of a large number of cases throughout June, July, and August, combined with study of spinal fluids and a small number of autopsies, leads to the conclusion that the outbreak which began in Wadena County spreading to surrounding counties and southeasterly along natural lines of travel, is poliomyelitis of an unusual type (encephalitis) involving both brain and meninges.

During the months of June and July this outbreak spread from Wadena county to Becker and Ottertail on the west, to the southern part of Hubbard and Beltrami Counties to the north, and southeastward to Todd, Stearns, Wright, Meeker, Hennepin, and Ramsey Counties, scattered cases occurring in various other parts of the State. Almost coincident with the beginning of the epidemic in Wadena County, there was a lesser epidemic center in Norman County with a few cases occurring in Mahnomen County. During June and July there were, in all, 32 counties invaded. During the month of August, 26 additional counties have been invaded. Four hundred fifty-nine cases with 33 deaths have been listed.

Prompt reporting of frank and suspected cases is urged. Autopsies, especially in unusual or merely suspected cases, are very much desired, and a pathologist will be furnished if autopsy can be secured.

AFTER-CARE

Attention is again called to the fact that on July 1, 1921, the field supervision of after-care treatment of poliomyelitis cases was turned over to the State Hospital for Indigent Crippled and Deformed Children, Phalen Park, St. Paul. All cases of poliomyelitis reported to the State Board of Health will be reported to the State Hospital for follow-up by them.

WARNING

Physicians cannot be too careful about casually dismissing from their personal supervision, cases which are just over the acute illness.

For a period of six weeks to three months following the acute attack, the most important treatment is rest. If weakened muscles are put into active use and are over-exercised during this period, they will not regain their tone as promptly as if rest is maintained. As long as there is any muscular tenderness, there should be no manipulation, rubbing, or massage. In small children, light pasteboard splints or some other device preventing motion, may be properly recommended for at least a part of the day or night.

Consult the State Hospital for Indigent Crippled and Deformed Children. *Field Supervision* by them will include *all poliomyelitis sufferers whether indigent or not.*

A SCHOOL FOR LABORATORY TECHNICIANS

The need of a first-class school to educate laboratory technicians for physicians' offices has been largely increased by the formation of group or clinics, as well as by the increased use of the laboratory for diagnostic purposes. This educational work has been done largely in hospitals, and it has been done poorly in most cases, for hospitals are not engaged in educational work of this character.

The Beebe Laboratories, of St. Paul, will open a school for education of technicians on October 5, and the educational work will not be merged with the commercial work, but the opportunties furnished by the commercial work will be turned to the advantage of the school. The clinical laboratory division of the Laboratories can furnish an unlimited supply of material, and the staff of the Laboratories can use this material daily for practical instructive work in the school.

The general course of instruction will require three months' time, and will include practically all the work done in the laboratories of hospitals and clinics. Instruction will be given by lectures, quizes, and actual

work on specimens in the laboratory. This will be given by members of the staff of the Laboratories and by specially qualified outside physicians.

In addition to the scientific instruction, this school will train its students in the varied work that they may be called upon to do in the office, especially in secretarial work, and in their relation to such patients as they may come in contact with.

Such a school can be of great service to the medical profession and very helpful to students.

BOOK NOTICES

THE WASSERMANN TEST. By Charles F. Craig, M.D., M.A., F.A.C.S., Lieutenant Colonel, Medical Corps, United States Army. Second edition. Cloth. Price $4.25. Pp. 279, with illustrations. St. Louis: C. V. Mosby Company, 1921.

So far as is known, this is the only book published in the English language which takes up the subject of the Wassermann test in a complete and comprehensive manner.

Very properly, the author introduces the subject by making a brief historical review and a theoretical consideration of the Wassermann reaction (Chapters I and II). A detailed description of the preparation and titration of the reagents and the various technics including Wassermann's original test and modified methods of the author and others, is a valuable guide to the laboratory worker. (ChaptersIV, V, VI.)

Such considerations as "Factors Which Influence the Result of the Wassermann Test" (Chapter III), "Results of the Wassermann Test in the Various Stages of Syphilis," "Time of Appearance of the Reaction." "The Specificity of the Test," "The Interpretation of the Results," "The Wassermann Test as a Control of Antisyphilitic Treatment," "The Provocative Wassermann," etc., are not only vitally important for the serologist to thoroughly understand, but also exceedingly helpful for the medical practitioner, regardless of his speciality, to bear in mind in the diagnosis and treatment of a case in which the Wassermann is made.

Thorough appreciation of these fundamental considerations will promote a better interpretation of the Wassermann and a more intimate and therefore a better application of the result of this test in the diagnosis, prognosis, and treatment of the patient. (Chapter VII, VIII, IX.)

The examination of the cerebro-spinal fluid is properly taken up in the closing chapter. In this the author describes the colloidal gold test, cell count, and tests for globulin contents of the fluid, and their significance. These tests, together with the Wassermann reaction, are all important and well-established diagnostic methods in cerebro-spinal syphilis, tabes and paresis. (Chapter X.)

The bibliography given in the last few pages is a valuable reference for the students interested in this subject.

KANO IKEDA, M. D.

DIAGNOSTIC AND THERAPEUTIC TECHNIC. A Manual of Practical Procedures Employed in Diagnosis and Treatment. By Albert S. Morrow, M. D., Late Lieut.-Colonel, M. C., U. S. A., Attending Surgeon to the City Hospital, and to St. Bartholomew's Hospital, New York City, Consulting Surgeon to the Nassau Hospital, Mineola, L. I. Third Edition, Entirely Reset, Octavo of 894 pages, with 892 illustrations, mostly original. Philadelphia and London: 1921. Cloth, $8.00 net.

The first edition of this book appeared ten years ago. The present edition has been revised and added to materially. The author states that the aim of his volume is to present an adequate description of many methods of diagnosis and treatment, which are usually to be found only after laborious search through numerous volumes on special subjects. The work has been well done; there are numerous illustrations, and the text is concise. The majority of the methods described are invaluable to the practitioner of medicine but there are also descriptions of a few methods used only by the well trained specialist. Under the latter head may be mentioned broncoscopy, esophagoscopy and some special ureteral instrumentation. Some of the descriptions have apparently been rewritten from the literature rather than described by one who has used the method in person.

The book contains a large and useful amount of information in one volume and practically any method of diagnosis and treatment used in general medical practice will be found described. The volume has a distinct place in medical literature.

H. M. WYNNE, M. D.

THE SURGICAL CLINICS OF NORTH AMERICA. (Issued serially, one number every other month.) Volume I Number 2. By New York Surgeons. 326 pages, with 116 illustrations. Per clinic year (February 1921 to December 1921). Paper $12.00 net; Cloth $16.00 net. Philadelphia and London: W. B. Saunders Company.

In February there appeared the first number of the new "Surgical Clinics of North America," the successor of the "Surgical Clinics of Chicago," so well appreciated during the past few years. The advent of the new journal marks the broadening out of a praiseworthy undertaking. This journal, like its predecessor, carries to its reader the vivid and lasting impressions gained by the consideration of concrete individual cases with discussion by eminent surgeons. Through the Surgical Clinics of North America the reader will visit not only Chicago but many other large medical centers of the continent.

The first number is the Philadelphia number. It includes among its contributors John B. Deaver, DaCosta, Ashhurst, John G. Clark, Charles H. Frazier, John H. Gibbon, and a number of others. The introduction is by Dr. W. W. Keen.

Of course some of the clinics include rare and curious cases, but one of the commendable features of the journal is the inclusion of surgical diseases that are most seen. Dr. Clark discusses the ultimate results of a hundred cases of prolapse of the uterus. Dr. Ashurst shows cases of fractured tibia and forearm, hemorrhoids, cystic ovary, cellulitis of the forearm and thigh, incomplete abortion, and deformity following infantile paralysis. Drs. Gibbon and Nassau take up, respectively, mammary carcinoma and carcinoma of the lip. Several contributors show patients with bone lesions: bone tumors of various kinds, Paget's disease of the bones, and fractures. Deaver's article on pancreatitis is comprehensive, interesting, and well illustrated. In fact the

well executed and numerous illustrations are a feature of the magazine.

The second number of the Surgical Clinics of North America is the New York Number. Among the contributors are F. H. Albee, Leo Buerger, John F. Erdmann, Charles L. Gibson, C. J. Heyd, Walton Martin, Willy Meyer, Eugene Pool, Fordyce St. John, and Allen O. Whipple.

The vivid conversational style of Erdmann carries the reader himself to the operating-room. The cases being operated on are exophthalmic goiter, cystic adenoma of the ovary, duodenal ulcer, chronic suppurative mastitis, and chronic cholecystitis. Albee's clinic includes five cases for plastic surgery of the hip and femur. Dr. Whipple has a clinic on surgery of the biliary tract. The first three cases are for post operative discussion with the students, and make very interesting reading; the fourth case is for operation and is accompanied by a discussion of the steps taken. Pool's clinic is an operation for removal of a complete cervical rib, and Buerger's is an illustrated clinical lecture on the complications of urinary lithiasis. The other clinics in the New York Number are just as interesting as those mentioned above. Some especially are splendidly illustrated.

THEODORE H. SWEETSER, M. D.

NEWS ITEMS

Dr. L. N. Klove has moved from Chokio to Kensington.

The new Miller Clinic of St. Paul has received a large supply of radium.

Dr. O. E. Carson, of Hecla, S. D., will move to Britton, S. D., on October 1.

A marked decline in infantile paralysis in Minnesota has occurred during the past few weeks.

Dr. Arnold P. Gruenhagen, of St. Paul, was married last week to Miss Floy Brown, also of Se. Paul.

A vigorous campaign against cancer will be made this fall and winter in Minnesota and adjoining states.

A considerable number of cases of mild scarlet fever have been reported in Minneapolis within the past three weeks.

The Rosedale Hospital of Minneapolis has filed articles of incorporation with a capital of $100,000. Dr. Troy S. Miller is the president of the corporation.

In our notice of the dissolution of partnership between Drs. V. E. Verne and H. J. Thornby, we made them residents of Thief River Falls, while they reside in Moorhead.

The Dakota County Welfare Association has been organized in Dakota County to take over the work of all the public health societies that have been working in the county. Dr. T. A. Brown, of Hastings, is the president of the organization.

Dr. William F. Wild, the new Executive Secretary of the Minnesota Public Health Association seems to have taken hold of his work vigorously and to have made an excellent impression on all who meet him.

St. Louis County is doing notable work in public health matters under an efficient executive secretary, Miss Louise Schneller, aided by the physicians of Duluth. All kinds of efficient clinics are given.

Dr. E. A. Pettinger, of the Lincoln Hospital Staff, of Aberdeen, S. D., conducted two health clinics for children at the city health department of Aberdeen last month. These clinics are becoming popular in Aberdeen.

Dr. J. L. Stewart has moved from Lead, S. D., to Belle Fourche, S. D., to take over the practice of Dr. A. O. Fasser, who goes East to take an extended course of special work.

Dr. Harold O. Cooperman, formerly of Minto, N. D., who has been doing postgraduate work for the past year in New York City, has opened offices in Minneapolis, suite 506 P. and S. Building. His practice is limited to ear, nose, and throat work.

For the next monthly meeting (October 11) of the Sioux Falls (S. D.) District Medical Society, the following is the program: "Hospital Standardization", by Dr. G. G. Cottam; "Dietetics", General, by Dr. Irene Smedley, and Pediatiric, by Dr. W. E. Donahue.

Dr. A. F. Schmitt has resigned as a member of the Mankato Clinic and has moved to Minneapolis and formed a partnership with his brother under the firm name of Drs. S. C. & A. F. Schmitt, with offices in the P. and S. Building. Their practice will be limited to surgery.

The hospital staff and twenty patients of the Northern Pacific Hospital at Brainerd were removed to the new hospital building in St. Paul on August 31. The N. P. Beneficial Association was organized in 1881, and it now possesses one of the finest hospitals in the Northwest.

The Minnesota Committee of the American Society for the Control of Cancer met in St. Paul last week, and made plans for a vigorous state campaign to begin next month. Dr. Verne C. Hunt of the Mayo Clinic is chairman of the committee named to conduct the state campaign.

Dr. Christian S. Reimstad, of Brainerd, died on August 28 at the age of 54. His death was caused by a fracture of the skull, the result of a fall on the kitchen floor of a patient he was visit-

ing. Dr. Reimstad was a graduate of the Medical School of the University of Minnesota, class of '96.

Dr. Fred Rundle, a pioneer physician of Western North Dakota, died at Midway, N. D., last month by suicide. Dr. Rundle graduated at Toronto, and practiced a short time in Michigan before going to North Dakota, where he practiced only as emergency physician, preferring business to medicine.

The Children's Code Commission, created by the last legislature of North Dakota, held its first meeting at Bismarck last month and organized for child welfare work. Dr. A. J. McCannel of Minot, is the only physician on the Commission of seven members. The program of the Commission is a big one, covering every feature of this work.

Dr. Sherman L. Lull, of Wabay, S. D., died on August 29 of cardiac heart failure at the age of 56. Dr. Lull was a graduate of the Ensworth Medical College, of St. Joseph, Mo., class of '92. At the time of his death he was Director of the Division of Venereal Diseases of the South Dakota State Board of Health. He was highly esteemed by the members of the Board and, indeed, by all who knew him.

The term "C. O. D." has been given a medical meaning by a North Dakota Doctor which may be made applicable elsewhere. His collections became so bad that a remedy became imperative, and he found it. He sent patrons the following notice: "I hereby take this opportunity to inform the public that on and after September 1 all obstetrical or confinement cases must be paid upon delivery and that no more babies will be charged. This step is necessary for me to take for the reason that you have plenty of time to prepare yourselves finanically for this occasion and as there is always a large item of expense attached to these cases I must insist on a cash on delivery settlement. The above does not apply in cases of sickness or accidents."

FINE LOCATION FOR A PHYSICIAN

In a fine Minnesota village, population 420, and two smaller villages in the territory. Territory of nearly 30x50 miles without a doctor. Last doctor left to seek smaller field. Good office with living rooms for rent cheap. Nothing to sell. Address 171, care of this office.

INTEREST IN PRACTICE IN MINNEAPOLIS WANTED

An Iowa physician desires to purchase in Minneapolis entire or part interest in a high-class eye, ear, nose, and throat practice. Address 172, care of this office.

POSITION AS SURGICAL NURSE WANTED

An experienced registered nurse desires a position as surgical nurse. Can take full charge of operating room. Available November 1. Twin City position preferable. Address 173, care of this office.

PHYSICIAN WANTED

Kensington, Minn., is in need of a physician at once. A Scandinavian preferred. Very big territory and the finest farming country in the state. Booming town. For further information, write E. T. Bjorklund, Kensington, Minn.

GOOD LOCATION WANTED

A high-grade young physician who has had an unusual training, some general practice, and two years with a leading surgeon of the Twin Cities, desires a good field, and would like one with near-by hospital facilities or a field that will help to start a hospital. Highest of references. Address 160, care of this office.

LOCATION WANTED

By a graduate of a Class A school and several years' experience. Can do good work in any of the branches of medicine or surgery. Willing pay a reasonable price for a good practice. Address 164, care of this office.

POSITION WANTED

Position as röntgenologist and laboratory technician. One-half year's experience in *x*-ray and one year in laboratory routine work. Do not mind dropping *x*-ray work for position as laboratory technician alone. Write Sgt. E. Hanson, M. D., Fort Snelling, Minn., or call Midway 7600.

INSTRUMENT FOR SALE

One Universal Ophthalmometer and one adjustable table (new). First check for $145.00 takes it crated f. o. b. A few dozen instruments in first-class condition, bone forceps, plaster forceps, etc. List and prices sent on application. Address 166, care of this office.

EYE, EAR, NOSE, AND THROAT PRACTICE FOR SALE

Well established in fine Southern Minnesota City. Will sell for a small cash payment and balance on easy terms. Address 169, care of this office.

LABORATORY POSITION WANTED

Laboratory technician, college graduate, with two years experience wants position in clinical laboratory. Familiar with complement-fixation and vaccine work, basal metabolism and blood chemistry, as well as routine work. Address 168, care of this office.

PHYSICIAN'S OUTFIT FOR SALE

The instruments, library, operating-table, sterilizers, and microscope of the late Dr. James Halliday are offered for sale cheap. Address Mrs. James Halliday, Mohall, North Dakota.

PHYSICIAN WANTED

A North Dakota town of 300 population wants a good doctor. The field is a large one, the nearest doctor being 12 miles in one direction and 25 miles in three other directions. Territory well settled. Good roads and good crops. Good man can make from $7,000 to $10,000 a year. Address 174, care of this office.

FILING CABINET FOR SALE

A $150 McCaskey Cabinet Filing System in excellent condition, used but a short time. $75 takes it. Address Dr. Otto J. Seifert, New Ulm, Minn.

PUBLISHER'S DEPARTMENT

NOVATOPHAN (IMPROVED)

Announcement is made by Schering & Glatz, Inc., that original Novatophan, "the tasteless Atophan for hypersensitive patients," in a modified and improved form, is now available.

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CHOLECYSTITIS, WITH SPECIAL REFERENCE TO THE RECURRENCE OF SYMPTOMS FOLLOWING OPERATIONS UPON THE GALL-BLADDER*

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In considering the question of cholecystitis we too often think of it as an acute or chronic inflammation of the gall-bladder, without considering the probable co-existing infection in the associated viscera. The gall-bladder is a part of the excretory apparatus of the liver, but, while it is undoubtedly important, it is not indispensable. It is frequently completely destroyed by inflammatory processes, and in recent years it has often been removed. Few, if any, manifestations result from the loss of the gall-bladder. Apparently man is just as happy without a gall-bladder as with one. I have followed the course of a great many patients for years after the gall-bladder was removed without finding a suggestion of differences as a result of the removal. There is one possible exception to this: Occasionally after the removal of the gall-bladder there is at times enough flow of bile into the intestine to cause it to be passed from the bowel at intervals during the day in addition to the normal bowel evacuations. This has occurred in a small number of the cases that I have observed.

The normal functions of the gall-bladder have been variously described, and new ones are constantly being suggested. Undoubtedly, one of the principal functions is that of a tension-bulb to the liver excretory apparatus. We know that the bile enters the duodenum under the influence of the sphincter muscle at the ampulla and that the actions of this sphincter are probably controlled by the character of the food contained in the duodenum, so that, if bile is needed for the digestion of the food in this part of the intestine at a certain time, the sphincter relaxes and the bile flows into the duodenum. If the bile is not needed it is held in the common duct by contraction of the sphincter. Bile is secreted by the liver continuously, so that, during the time the sphincter is closed, it accumulates in the gall-bladder and remains there until it is used in the duodenal digestion. The gall-bladder is not a storage organ in the sense of a large reservoir, as the liver secretes many ounces of bile each day and the gall-bladder, at most, will hold only two or three ounces.

Another function of the gall-bladder is the secretion from its mucous membrane of a mucus which is added to the bile. The same mucus is also secreted by the glands in the ducts, so that the gall-bladder is not the only source.

*Presented at the Thirty-fourth Annual Meeting of the North Dakota State Medical Association, Fargo, N. D., May 26 and 27, 1921.

When this mucus is added to the bile it is much less irritating to the tissues of the pancreas than is the concentrated bile. We have not been able to show that bile under the action of the resistance of the sphincter will enter the pancreatic duct, but it has been shown that bile injected into the pancreatic duct is very irritating to the pancreas and that, if in any appreciable quantity, it will set up a severe pancreatitis. When the gall-bladder is removed or destroyed other changes lessen the likelihood of this phenomenon occurring.

Raus and McMaster, working at the Rockefeller Institute, have recently suggested a new function for the gall-gladder,—its concentrating activity. Estimating the concentration by the pigment content of the bile, they have shown that the bile in the gall-bladder for twenty-four hours was concentrated from six to twelve times over that which was drained into a rubber bag as a control in the experiment. Apparently these experiments show that the only possible changes that could have taken place were due to the action of the gall-bladder. They first showed that the fluid that collects in the bile ducts, when experimentally obstructed, is inspissated tarry bile when these obstructed ducts are still allowed to connect with the gall-bladder. If the ducts are not connected with the gall-bladder, the fluid under similar conditions is thin and soon becomes free from pigment and cholates. They believe that the inspissation occurs so rapidly as to raise the question of whether concentration of the bile may not be an important factor in favoring the formation of gall-stones.

No matter how important these several functions of the gall-bladder seem to be, there is, nevertheless, apparently good compensation after removal or destruction of that organ.

Some time ago I called attention to the changes which occur after the gall-bladder has been removed: first, a gradual dilatation of the extrahepatic bile ducts, and, second, paralysis of the sphincter of Oddi. Apparently this dilatation of the common duct reaches a certain point, and then from increased pressure, probably owing to hypertrophy of the wall of the ducts, the resistance to the bile-stream offered by the sphincter is entirely overcome. As a result of this the bile flows continuously into the duodenum under practically no pressure. This phenomenon suggests the manner in which a chronic pancreatitis or chronic hepatitis associated with the cholecystitis might also be relieved by the removal of the gall-bladder.

Source of Infection and Etiology.—Hepatitis as a constant or almost constant accompaniment of cholecystitis is recognized by all. We are just beginning to recognize the intimate association between the gall-bladder and the liver through the lymphatics and blood-vessels, and to wonder whether the primary infection may not often be in the liver tissues. The frequency of acute and chronic pancreatitis occurring in association with cholecytitis is also recognized; and it is so often accompanied by marked enlargement of the regional lymphatics that it suggests that these vessels may afford the route for the passage of the infection from the gall-bladder to the pancreas, or possibly for its extension from the pancreas to the gall-bladder. The working of the mechanism of the excretory apparatus of the liver must be kept in mind, as bile, entering the pancreas by way of one of its ducts, will result in exactly the same changes in the pancreas as are seen in the ordinary inflammations called *pancreatitis*.

The blood-stream must be considered first as a source of the infection. Mann's experiment with chlorinated soda showed, beyond doubt, that certain substances injected into the blood-stream select the gall-bladder as the most vulnerable tissue; other tissues may not be affected. This chemical passes through the blood-stream, or possibly through the liver, to the gall-bladder by way of the lymphatics. It seems most likely that the blood-stream, and not the lymphatics, is the route of the passage of this chemical to the gall-bladder. The only evidence of effect on the tissues was seen in the walls of the gall-bladder itself.

As a result of the experiments by Graham we may feel that cholecystitis, in some instances, is secondary to hepatitis and that, in some instances, infection of the liver might pass directly to the gall-bladder through the lymphatic vessels between the gall-bladder and the liver. It is probable, however, that infection is most often primary in the gall-bladder and secondary in the liver.

The portal circulation offers an avenue of infection to the liver. Infection occurring in this manner might lodge in the liver tissues and extend to the lymphatics of the gall-bladder, or it might pass on by way of the bile-stream and enter the gall-bladder. It must be remembered

that when the bile is being secreted by the liver it has an antitoxic property, which might have a tendency to destroy these infections, also that the lining of the gall-bladder is a firm mucous membrane not easily penetrated. If this is intact it is unlikely that infection extends through it to the tissues.

The possible entrance of infection from the intestinal tract through the ampulla and ducts to the gall-bladder, liver, and pancreas, must still be considered, although it probably rarely occurs in this manner. While it is known that parasites from the intestinal tract often obtain entrance into the biliary tract, it is also known that the content of the duodenum under ordinary circumstances is sterile, so that its entrance into the duct would not probably result in harm.

Clinical Features.—From a clinical point of view, cholecystitis may be divided into several types according to the special manifestations of the symptoms.

The first type is the most common, and is revealed by the characteristic short, sharp attacks of severe right hypochondriac pain which radiates to the back and usually to the right shoulder. The attacks are sudden in onset and last from a few minutes to several hours. The pain in these attacks is due to the obstruction of the duct by a stone or to the infection in the gall-bladder. It is surprising how much the effects of inflammation in the gall-bladder may vary. In certain cases in which the disease is not well marked, the symptoms may be quite severe, and, on the other hand, the gross pathology may involve nearly all of the tissues with infection extending throughout the organ, without causing symptoms nearly so severe as those in the other cases. In the first type of cholecystitis, as soon as the pain has subsided the patient is usually entirely well, although there may be a slight soreness in the right hypochondrium which persists for a short time.

The second type of cholecystitis consists of cases of gall-bladder dyspepsia. Usually these patients complain of a long-standing atypical dyspepsia. The gastric acids are usually normal, or lower than normal, and the pain and discomfort either are not related to food or are made worse by food. The pain is not severe, and is generally constant, though there may be some slight attacks of colic. Usually there are soreness and tenderness over the gall-bladder and often an intermittent tinge of jaundice. Dyspepsia as a result of chronic inflammation in the gall-bladder is undoubtedly much more common than we realize. So far as I know, no definite syndrome has been established, and it is often difficult or impossible to make a diagnosis, yet it is not unusual in operating in such cases to find a gall-bladder containing stones and infection. Removing the gall-bladder results in absolute subsidence of all symptoms. While I believe that we should be very conservative in making a diagnosis of dyspepsia due to an infected gall-bladder, in the absence of local symptoms, at the same time I feel sure that infection in this region is more often than we realize the cause of dyspepsia.

The third type is composed of cases in which infection in the gall-bladder acts as a focus of a more or less general infection. While these cases are not common, there is sufficient evidence to show that the gall-bladder may act as a focus for infection manifested by rheumatism and other remote conditions. It is difficult to estimate in these cases just how much the infected gall-bladder may be concerned in the condition for usually there is also dental sepsis and possibly some throat or sinus infection. We must not consider the gall-bladder a primary source of infection unless there is some evidence of local trouble. Slight tenderness in the right upper abdomen or indefinite pain would not be sufficient to warrant consideration of an operation in these cases. More careful studies of groups of cases may give us more definite information.

The fourth type of cholecystitis is associated with migraine. It seems to me that there is no way to explain this phenomenon except as a general toxemia with migraine as one of the manifestations. Migraine itself probably occurs much more often without associated gall-bladder disease; on the other hand, migraine accompanied by evidence of definite inflammation in the gall-bladder, in many cases, entirely disappears when the condition of the gall-bladder is relieved. The connection between the two conditions is hard to explain, but the clinical evidence is too great to consider it a mere coincidence. We have observed a considerable number of patients whose relief from the migraine was complete and permanent after the removal of an infected gall-bladder.

Diagnosis.—The diagnosis of cholecystitis depends almost entirely on the clinical history. In our experience positive *x*-ray findings are of

value in approximately 20 per cent of the cases. It may be very difficult, however, to determine that a definite shadow is being produced by a stone in the gall-bladder. Gall-bladders without stones may sometimes be visualized, but whether or not they are infected cannot be determined.

Much interest has been manifested within the past few months in the so-called drainage of the gall-bladder by means of a Rehfuss tube in the duodenum. Melcher showed, years ago, that magnesium sulphate put into the duodenum through a tube would cause the relaxation of the sphincter of Oddi, and as a result of this naturally any bile being held in the bile-ducts or gall-bladder could be collected through a tube in the duodenum. Lyon, taking advantage of this, is using the method in diagnosis and treatment of certain gall-bladder cases. While it is certainly very striking to see the bile withdrawn through the tube in this manner, at the same time there is some question of just how accurate this is. The first bile to escape is presumably from the common duct, the next, from the gall-bladder, and the last from the hepatic and liver ducts. This aid to diagnosis and treatment may eventually become very valuable; at any rate, it is sound enough not to be condemned without extensive trial.

Operations for infections in the biliary tract and for the removal of calculi are uniformly satisfactory.

In severe cases the preparation of patients who are jaundiced or who have an associated acute pancreatitis or other complication may be carried out so that the risk is greatly reduced. The mortality from the operation is practically nil, provided there are no complications. More depends on the patient's general condition than on the severity of the operation. By some improvements in the technic, the immediate convalescence from the operation has been made much better both with regard to the amount of discomfort and time.

Since we undoubtedly learn more from our failures than from our successes, I wish to dicuss the failures that occurred in the Clinic following operations on the gall-bladder and gall-ducts in 1920. Dr. Copenhaver and I have carefully reviewed all of the secondary cases, and, while the investigation does not bring out anything especially new, it gives information concerning the operation most often followed by a recurrence of symptoms. (Table 1.) One thousand twenty-two operations were performed on the gall-bladder and ducts during 1920, and of this number 114 were operations necessitated by the recurrence of symptoms after the first operation. In most of these the recurrence followed the procedure of choice at the time of the primary operation, although in a number of our own cases and undoubtedly in a number of those in which operation had been performed elsewhere the type of the first operation was chosen because it was the safest at that time. At least in some of these cases it was presumed that a second operation might be necessary at a time when the risk would be much less. The 114 recurrent cases include our own cases and those in which the primary operation was performed elsewhere. In 28 of the 114 cases we performed the primary, as well as the secondary, operation, and, of course, this group afforded the better opportunity for study. After the first operation most of the patients were completely relieved of all symptoms, although seven assert they were better for a time, but were never entirely free from their former trouble. Most of these patients had had drainage, and they undoubtedly had inflammation in the gall-bladder too extensive to be relieved in this manner. In some there was evidence also of hepatitis and pancreatitis, which of course caused a continuation of the symptoms. These conditions cause pain, discomfort, and dyspepsia for a long time, evidenced especially by gas in the stomach. However, in many intsances the symptoms are undoubtedly secondary to the inflammation in the gall-bladder, and are relieved only after the infection is cleared up. The patients who reported relief following the first operation, remained free from symptoms for an average of two and one-half years. While infection may be quiescent for a long time in any tissue, it would seem that freedom from symptoms for two and one-half years is suggestive that there was no infection or calculi present during that period, and that the conditions were mostly recurrences.

In Table 2 are tabulated the cases in which the primary and secondary operations were performed in the Clinic and the findings at the time of the first and second operations. The majority of these patients had cholecystitis with stones. Fifteen of the 28 patients simply had drainage of the gall-bladder at the time of the first operation. In seven of the patients a cholecystectomy was performed at the time of the primary operation, and yet there was a recurrence of symp-

toms. In most of the seven patients the recurrences were due to a stone in the common duct, and, judging from the length of time they were free from symptoms, I believe that in most instances the common-duct stone formed after the gall-bladder was removed. In some of these there were from ten to twelve years of freedom between the first and second operations.

In Table 2 are also tabulated the eight cases in which stones were found in the gall-bladder at the second operation. In most of these, stones had been removed from the gall-bladder at the first operation, although in two in which the operation was for drainage there were no stones. This would seem to indicate that the infection in the gall-bladder was too great to be relieved by drainage, and stones formed as a result. There are many cases on record, and we have observed a number in which stones formed in the gall-bladder after cholecystostomy with removal of the stones and drainage. In some cases small stones may be overlooked, but in many cases they re-form. This point is illustrated in Table 3. Stones were removed from the gall-bladder in 39 of the 58 patients at the time of the primary operation, and the gall-bladder was drained and no stones found in 19. At the secondary operation on the 58 patients, stones were found in every instance, whether or not they were present at the primary operation.

The study of this particular series of cases would seem to suggest the great frequency of the recurrence of gall-stones, and, I believe, emphasizes that particular point more than any other series of similar cases I have studied. The impressions we have gained from these cases of recurring symptoms are the same as those reported after a similar study several years ago, namely, that the removal of the gall-bladder reduces the risk of later trouble, and furthermore, that it is very doubtful if a gall-bladder that has been extensively infected will ever functionate to any degree again. Next to the gall-bladder the most usual site of secondary trouble is in the common duct, but there is no doubt that the recurrence of symptoms due to stones in the duct is the result of the formation of the stones after the gall-bladder had been removed. Opening and exploring the common duct at the time of the primary operation would not obviate this. Associated infections in the liver and pancreas are often the cause of secondary trouble, although many times this subsides gradually and nothing further is required. In other instances it may be necessary to establish biliary drainage by a common duct tube for the relief of attacks simulating hepatic colic when no stone or gross evidence of disease is present. Fortunately this does not often occur.

In my opinion the great problems in the surgery of the diseased gall-bladder and ducts are to be found in the association of the pancreas and the liver. The results following surgical procedures for diseases of the gall-bladder and ducts are very gratifying, yet, in some of the cases in which there is a recurrence of symptoms, I believe the trouble may be found in the liver or pancreas. Nevertheless, the fact that these secondary conditions are relieved by draining the common duct, does not make it wise to adopt this procedure as a routine. Possibly as our knowledge of these secondary conditions advances, we may be able to recognize the lesions at the primary operations and give special treatment to the patients who require it.

TABLE 1.

OPERATIONS ON THE GALL-BLADDER AND BILIARY DUCTS DURING 1920.

Operations on the gall-bladder and ducts	1022
Operations on the gall-bladder alone	995
Operations for the recurrence of symptoms	114
Females	83
Males	31
Cases of recurrence in which the first operation was performed in our Clinic	28
Females	20
Males	8
Average age of the twenty-eight patients at the second operation	49 years
Average length of time patients were free from symptoms (seven patients were never entirely free from symptoms)	2.5 years
Average length of time between the first and second operations	6.5 years

TABLE 2.

TWENTY-EIGHT CASES OF CHOLECYSTITIS IN WHICH THE FIRST OPERATION HAD BEEN PERFORMED IN THE MAYO CLINIC

	Cases
Findings at first operation	
Cholecystitis with stones	20
Cholecystitis without stones	8
Common duct stones	3
Pancreatitis	3
Empyema	1
Type of first operation—	
Cholecystectomy	7
Cholecystectomy with common duct operation	2
Cholecystostomy	15
Cholecystostomy with common duct operation	2

Choledochostomy (cholecystectomy elsewhere)	2
Findings at second operation—	
Cholecystitis with stones	8
Cholecystitis without stones	7
Common duct stones	3
Pancreatitis (associated)	6
Jaundice	9
Stricture of the common duct	2
Empyema	1
Persisting sinus	0
Location of stones at second operation—	
Gall-bladder	8
Cystic duct	0
Common duct	4
Hepatic duct and liver	1
Ampulla	3

TABLE 3.

FIFTY-EIGHT CASES OF BILIARY STONES IN WHICH THE FIRST OPERATION HAD BEEN PERFORMED ELSEWHERE

	Cases
Findings at first operation (data obtained from history).	
Cholecystitis with stones	39
Cholecystitis without stones	19
Common duct stones	3
Stricture of the common duct	0
Empyema	5
Type of first operation	
Cholecystostomy	47
Cholecystectomy	5
Exploration of gall-bladder only (1 patient had had three operations)	4
Cholecystectomy and choledochostomy	2
Findings at second operation	
Cholecystitis with stones	51
Common duct stone	20
Pancreatitis (associated)	15
Stricture of the common duct	1
Empyema	3
Persisting sinus	8
Location of stones at the second operation	
Gall-bladder	38
Cystic duct	7
Common duct	18
Hepatic duct	3
Ampulla	1

TABLE 4.

TWENTY-EIGHT CASES OF CHOLECYSTITIS WITHOUT STONES IN WHICH THE FIRST OPERATION HAD BEEN PERFORMED ELSEWHERE

	Cases
Findings at first operation (data obtained from history).	
Cholecystitis with stones	9
Cholecystitis without stones	18
Common duct stones	0
Stricture of the common duct	0
Empyema (two operations and abscess drained)	1
Type of first operation (data obtained from history).	
Cholecystostomy	27
Partial cholecystectomy	1
Associated common duct operation	0
Findings at second operation	
Cholecystitis without stones (common duct opened in 1)	28
Pancreatitis	7
Stricture of the common duct	0
Empyema	1
Persisting sinus	1

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DISCUSSION

Dr. Geo. M. Williamson (Grand Forks): The point in this address which particularly impresses me is the number of recurrences after simple drainage of the gall-bladder. I presume the operation of simple drainage is done more frequently by the average surgeon because it seems to be the safer operation to be attempted by a surgeon of moderate skill. In the hands of Dr. Judd the removal of the gall-bladder seems to be the ideal operation and one that is followed by better results and with less likelihood of recurrence of trouble.

I am sure the Association will be very much benefited by listening to Dr. Judd, whom we all consider an authority on gall-bladder surgery.

Dr. W. A. Dennis (St. Paul, Minn.): I presume Dr. Judd did not mean to say that there is nothing characteristic about the indigestion of gall-bladder disease, although this was what I inferred.

In my experience the typical food idiosyncrasy and gas belching after meals are characteristic of about 90 to 95 per cent of gall-bladder cases.

What I believe to be one of the causes of symptoms following cholecystectomy Dr. Judd did not mention, and this is the formation of adhesions involving the duodenum and stomach. After any operation in the gall-bladder region great care should be taken to prevent the re-formation of adhesions. This is accomplished by the interposition of fatty tags or omentum. We have not infrequently been able to relieve this condition by this procedure where it had not been carried out at the original operation.

Dr. Judd (closing): In regard to diagnosis: The point I wished to make was, that, when the gall-bladder is the cause of dyspepsia, there is no way of determining whether the gall-bladder or the appendix is responsible for the trouble unless there is some localizing symptom. There is no syndrome that will tell which it is. We know that dyspepsia is often caused by a chronic appendicitis, and the distinction between the

two conditions was the point I wished to emphasize.

Dr. Dennis also emphasized that adhesions might be the cause of the secondary trouble, and I think that is a very good point. I did not go into the technic of the operation a great deal, but I agree with him in everything he says about care in the technic. Just as little suturing and just as little trauma to the surrounding tissues as possible will result in fewer adhesions.

One other point I might mention and a thing that is surely going to prevent many adhesions is to close the abdomen without any drainage at all. This was brought out by Murat Willis, of Richmond, Va., who reported about forty cases closed without any drainage at all. We have since been practicing this method more and more in our own Clinic. I am sure the convalescence will be better and that there will be fewer adhesions and more clean cases if you close without drainage.

THE FINNEY PYLOROPLASTY*

By T. F. Riggs, M. D.
PIERRE, SOUTH DAKOTA

In presenting the Finney pyloroplasty I shall offer nothing new; neither shall I weary you with statistics, for these are easily available.

It is not my intention to precipitate a discussion upon the relative merits of this or any other form of gastro-intestinal surgery. My whole desire is to remind you of a certain operation of definite and established value which, I fear, many of you have forgotten or do not appreciate.

Without doubt my enthusiasm is heightened because it was my privilege to spend three years in a hospital service on which Dr. J. M. T. Finney, of Baltimore, was the chief surgeon. The opportunity this gave for observing the value of the operation in the hands of its originator was inestimable.

Surgery of the stomach and duodenum, as surgery elsewhere, depends for its success upon the judgment and skill of the operator; realizing that the personal equation of the surgeon, as well as his experience and familiarity with certain operative technic, should have great weight, yet I shall hope to show you that there are certain conditions in which the Finney pyloroplasty is the operation of choice, giving you and especially your patient the greatest satisfaction and benefit.

Dr. Finney first introduced his operation of pyloroplasty in a paper read before the American Surgical Association in 1902 reporting five cases. Since that time he has presented several papers with published reports, which many of you no doubt have either heard or read.

It is interesting to note that in 1886 Heineke did the first plastic operation for benign stricture of the pylorus, and a few months later Mikulicz used exactly the same procedure wholly ignorant of the work of Heineke, and since that time the operation has been known by the names of these two surgeons. In Finney's operation the name pyloroplasty is used to designate a special procedure, which technically is a gastro-pyloroduodenostomy. This term because of its length is objectionable, and, moreover, as the operation is truly a plastic operation upon the pylorus the name chosen seems wholly descriptive and applicable. Similar methods or modifications of this operation have been described by Narath, Kocher, Gould, and others, but none of these present any material advantages over the original method.

The operation, which is an application of the method of lateral entero-anastomosis, suggested by Dr. W. S. Halsted, of Baltimore, may be described as follows: Divide any adhesions binding the pylorus to the neighboring structures, and also free, as thoroughly as possible, the pyloric end of the stomach and the first portion of the duodenum. The thoroughness with which these structures are freed determines largely the ease and success of the operation. This is one of the most important points in the operation, as was shown by the emphasis laid upon this procedure by Dr. Finney and later by Professor Kocher. The Finney-Kocher method of "mobilization of the duodenum" consists in the blunt and sharp dissection of all adhesions binding down the duodenum, after which, through a small oblique incision in the peritoneal coat covering the upper surface of the duodenum, it is possible by finger dissection and gentle traction to split back the peritoneal coat, allowing the first portion of the duodenum to be slightly rotated and lifted forward to a point of easy access. Following this mobilization, to use Dr. Finney's words, a suture is taken in the upper wall of the pylorus, which is then retracted up-

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ward by means of this suture. A second suture is then placed in the anterior wall of the stomach, and a third in the anterior wall of the duodenum at equidistant points from the suture just described in the pylorus. The second and third sutures are taken as near the opposing free borders of the stomach and duodenum as possible and mark the lower ends of the gastric and duodenal incisions, respectively.

Traction is then made upward on the pyloric suture, and downward in the same plane on the gastric and duodenal sutures. This keeps the stomach and duodenal walls elevated and taut, and allows the placing of the subsequent sutures with greater facility than if they remained retracted and relaxed. The peritoneal surface of the duodenum and stomach along its greater curvature are then sutured as far posteriorly as possible. For this row the continuous silk suture is to be preferred.

After the posterior line of sutures has been placed and tied, an anterior row of mattress sutures is taken, which are not tied. These sutures, after they have been placed, are drawn aside, thus exposing the line of incision, or more properly the field in which the incision is to be made.

After all the anterior stitches have been placed and retracted the incision is made in the shape of a horseshoe. The anterior and posterior lines of sutures should be placed far enough apart to give ample room for the incision to be made between them. Beginning in the gastric wall, the incision is carried upward to and through the pylorus and around into the duodenum. Hemorrhage is then stopped. Scar tissue or active ulcers present in the gastric or duodenal anterior wall may be excised through this incision.

Those in the posterior wall we have been treating just as other chronic ulcers, that is excision of the overhanging edges of mucous membrane, and incising the dense fibrous base, care being exercised to avoid perforation of the posterior wall of the stomach and to stop all hemorrhage by ligature or suture.

The opportunity thus afforded to explore digitally and inspect the ulcerated area and then excise it through this incision, is, in our judgment, one of the strongest points in favor of the operation.

A continuous catgut suture is now taken through all the coats of the stomach and duodenum on the posterior side of the incision in order to reinforce this line of sutures. The anterior sutures are then straightened out and tied, and the operation is thus completed. The mattress sutures may be reinforced with Lembert sutures, or a continuous suture may be used, as may be thought best. All the stitches are thus placed and posterior row tied before the bowel is opened, and it remains open long enough to control the hemorrhage and excise any ulcer that may be present, thus giving the minimum of exposure of infected surfaces.

The size of the newly formed pylorus may be made as large or small as desired. Unless the stomach is very much dilated or has descended to an unusual extent, the lower limit of the new pylorus will be found to be at or near the level of its most dependent part. The new pylorus usually averages about 10cm. in diameter.

A recent letter from Dr. Finney says, "I have enlarged the scope of the operation somewhat lately. After putting in the first continuous posterior suture between the stomach and the duodenum and after having made my inverted or horseshoe incision, in cases where the ulcer is on the posterior wall of either the stomach or the duodenum and near the pylorus and where the pylorus is not too tightly fixed to the retroperitoneal structures, I take a wedge-shaped piece, with the base upward, out of the posterior stomach and duodenal walls, including the pylorus and ulcer, then stitch together the posterior wall of the mucous side with a continuous buttonhole catgut suture and reinforce from the outside with silk. In this way one can resect considerable portions of either the stomach or duodenum or both as the necessities of the case may indicate."

A clear visualization of an operation from a verbal description, even aided by illustration, is exceedingly difficult. Perhaps the chief reason for the failure of Western surgeons to fully appreciate the possibilities of the Finney pyloroplasty is because relatively few of them visit the Eastern clinics where the operation is held in higher esteem. I would urge those interested to make the point of seeing the operation done by that master surgeon, its originator.

In carcinoma of the pylorus or ulcer of the cardia or pars media of the stomach, naturally this operation is not to be considered. The only other contra-indications are thickening and infiltration about the pylorus due to hypertrophic forms of ulceration, gastric disturbances not de-

pendent upon organic disease, and inability to mobilize the duodenum because of too dense adhesions, which conditions are of relatively rare occurrence.

There are three general conditions in which pyloroplasty would seem to be most applicable: namely, in benign pyloric stenosis due to cicatricial contraction, in chronic recurring pyloric or duodenal ulcers, and in acute bleeding ulcers of the same region not responding to medical treatment.

In the first place the operation preserves the natural anatomical and physiological outlet, which, obviously, is an advantage. Secondly, as has been frequently proven, it admits of direct examination and active treatment of pyloric and duodenal ulcers of the several types. Thirdly, repeated studies show a practically uniform restoration to the normal condition of the stomach in size, function, and motility.

Post-operative complications are rare, post-operative vomiting being almost never troublesome, possibly, because of the cutting of the pyloric sphincter. Post-operative treatment is simple. The mortality-rate is low. The immediate and ultimate results are very satisfactory.

As Dr. Finney says of the individual operator and his choice of operation in indicated cases, "Having at all times, first and foremost, the good of his patient at heart, he should choose that particular method which has been followed by the best results in his own hands, being zealous at all times to perfect himself in those methods having sound physiological and pathological bases."

DISCUSSION

Dr. R. L. Murdy (Aberdeen): I listened to Dr. Rigg's paper with a great deal of interest. Dr. Riggs, as usual, has presented a very comprehensive paper. The only possible criticism I could make of the paper is, that he has not left anything for me to say about the Finney pyloroplasty. However, there is a good deal to be said about pyloric pathology and pyloric surgery in general.

When we reflect that pyloric surgery dates from the first successful resection of the pylorus performed by Dr. Billroth, of Vienna, in the year 1881, we see that the surgery of the pylorus was born and developed with all its refinements in forty years. We have reason to be proud of this wonderful achievement. Dr. Billroth's achievements in surgery of the viscera placed him at the forefront, and he probably led all the surgeons of the world in this class of surgery. He also performed successful operations on the esophagus and other organs. His leadership in pioneer work and practically unexplored fields entitled him to the designation of father of visceral surgery. He, therefore, laid the foundation for a colossal work—one of the most brilliant pages in the history of modern surgery. He has, therefore, left his imprint upon the practice of surgery in a very marked way. He also left some brilliant students to carry on the work which he fathered. He was also capable of inspiring his students to great deeds, such, for instance, as Dr. Czerny, Dr. Mikulicz, Dr von Eiselberg and others, who are known to medical history the world over.

Since Billroth's time the pylorus and the stomach have been subjected to very intensive study. This has been a comprehensive study of their anatomy, physiology, chemistry, and pathology. A number of operators in this and other countries who have done a great deal of stomach and pyloric surgery, have made the observations that 98 per cent of all ulcers in the duodenum occur in the first inch and a half of it, and that practically all ulcers in the stomach occur in the lesser curvature. Dr. William J. Mayo has made the observation that, in making these examinations, there is an anemic spot on the pylorus and on the lesser curvature of the stomach, and he feels that there is some anatomical reason for the development of ulcers in this region. This inspired the work of Reeves, whose report is based upon an intensive study of sixty-four stomachs. His report included a study of the circulation in general and a microscopical study of the blood supply to the various parts of the stomach. His studies verified a well-known observation, that the stomach and duodenum are very well supplied with blood, so well that you may tie off any one of the four principal arteries, and yet there would be no diminution in the blood supply. His microscopial study disclosed the fact that the blood supply of the mucosa was considerably limited; that the arterioles that supplied the duodenum were very long and very narrow and terminate in a shower of capillaries. This was quite different from the blood supply of other parts of the stomach in which the blood vessels were shorter and larger. So you see there is an anatomical foundation for the location of ulcers in the pylorus and in the lesser curvature. Taking these anatomical facts into consideration, together with the bacteriological investigations of Rosenow, showing that certain bacteria have an elective affinity for this region, will help to explain the effect of thrombosis of one of these terminal arterioles. It is apparent that, if the arterioles terminate in a cluster of capillaries that supply a given part with little or no anastomosis, the effect of thrombosis would be to practically cut off the blood supply to this part. With circulation destroyed or much reduced, the digestive and mechanical action of the stomach is sufficient to produce ulcer and keep up the process. With a limitation of the blood supply to this region, once one of these ulcers has formed, the chances of regeneration of the capillaries and tissues are not very favorable; therefore there are anatomical, bacteriological, and other reasons for the location and the chronicity of ulcers in this region.

These investigations have likewise disclosed a large number of surgical conditions in this region. Among them we might mention congenital and hypertrophic stenosis of the pylorus. Congenital stenosis occurs in from one to three weeks after birth in infants, and is quite a common condition. To relieve the pathology of this condition various operations have been devised. To relieve congenital and hypertrophic stenosis of the pylorus Heinecke conceived the idea of cutting the serosa and the muscle in a longitudinal direction and stitching

it transversely. An operation was perfected in 1886, the immediate results of which were very good, but showed a tendency to relapse in the course of six months or a year. To overcome the remote effect of this operation, Mikulicz conceived the idea that a longer incision would be more lasting in its effect; therefore Mikulicz extended the incision up into the duodenum and down into the stomach and closed it with the same method as described by Heinecke. Since this modification it has been known as the Heinecke-Mikulicz pyloroplasty.

More recently Ramstedt devised an operation for congenital and hypertrophic stenosis, in which he used the Heinecke-Mikulicz principle of incision, but abandoned the sutures. The Ramstedt operation has been very successful in the relief of some of these conditions, as it can be done with the minimum amount of time and trauma. It has given good immediate and remote results. It has saved the lives of a great many children. A number of surgeons have worked along the line of the Ramstedt operation with certain modifications. Dean Lewis and Richter have done a great many of these operations. Strauss has added to the original Ramstedt operation by dissecting loose the mucosa on either side of the incision for a distance, and filling in the defect in the pylorus with a muscle graft and suturing the omentum over the graft to reinforce the incision. The Strauss technic has added to the security of the operation at the expense of time. It will prevent leakage, but leakage seldom occurs with the Ramstedt operation when carried out with great skill.

In regard to the Finney technic for pyloroplasty, Dr. Riggs has left little for me to say; however, I do not feel that we should pass over the subject without some discussion of the modifications of the Finney pyloroplasty or pyloroplasty by some other method. As the Finney pyloroplasty is a very technical and intricate operation, it requires a skilled operator and skilled assistants to perform it successfully. I feel that some of the modifications, perhaps the operation with the clamps in the same manner that we do an ordinary anastomosis, would be safer in the hands of men who are less skilled in the Finney technic. I would advise against a Finney pyloroplasty where the conditions can be relieved with a gastro-enterostomy, this being a safer operation and much easier to execute, therefore conserving the element of safety to the patients.

Dr. Carl Hedblom (Rochester, Minn.): I am very much interested in this paper of Dr. Riggs. He hit the nail squarely on the head when he said that a man should practice the operation that he is best fitted for and best qualified to do, but that he should be very keen to learn and to adopt better methods. It is just as illogical to try to use one operation for all kinds of cases as it is to try to catch all kinds of fish with one kind of hook or one kind of bait. The point that I should like to take up is not the matter of the technic of the operation, because there is nothing left to say as to that, but the indications that call for a Finney pyloroplasty as against other methods of operating. It seems to me that is where not only skill but the judgment of the surgeon comes in. We in Rochester have done gastro-enterostomy by preference in most cases where others would do a Finney pyloroplasty. I feel, however, there is a definite field for this operation, and Dr. Balfour recently wrote a paper on this subject. We find cases in which there is an ulcer on the duodenum and one near the pylorus on the stomach side, and so situated that by doing a Finney pyloroplasty one can remove both ulcers, and that, it seems to me, is one of the indications for a pyloroplasty. There are other cases in which it is difficult to lift the stomach out, cases in which, particularly in older individuals, the stomach is fixed and requires a good deal of dissection to bring it up. In cases of that sort, if one can do a pyloroplasty, which is as a rule possible, it will obviate the necessity of doing a lot of manipulation of the stomach itself.

Bleeding ulcers of the duodenum require special treatment. For a simple chronic ulcer of the duodenum gastro-enterostomy will yield good results, and it is not particularly necessary to try to adopt any special technic, but an ulcer that bleeds we routinely either cauterize, excise, or do a pyloroplasty.

Dr. Murdy spoke of an anemic spot and its possible significance in the formation of ulcers. Unfortunately, that explanation does not hold for a gastric ulcer. As he mentioned, the majority of gastric ulcers occur along the lesser curvature, where there is a rich blood supply, showing that the anemia is certainly only one of the factors. That brings up another consideration that was not mentioned in the paper, and that is, if you do a pyloroplasty you do not get the chemical effect on the stomach that you get if you do an ordinary gastro-enterostomy. If you do a gastro-enterostomy, there will probably in all cases be a certain amount of flow of the alkaline intestinal juices into the stomach which will tend to neutralize or lower the acidity of the stomach. Dr. Charles Mayo has often emphasized the importance of this particular result of the gastro-enterostomy. He says these patients carry their own alkalies with them and they get it when they need it most, that is to say, there is probably an increase in the alkaline secretion at the same time as the increased flow of gastric juice, and the hyperacidity is reduced. That does not usually happen after a pyloroplasty.

As to the use of suture material: We have practically abandoned silk in our practice, even in cases of carcinoma, where we thought formerly it was necessary. I am not sure whether Dr. Riggs used silk on the inside in the cases of recurrent ulcer.

Dr. Riggs: On the outside.

Dr. Hedblom: We have come to believe that silk is one of the causes of recurrent ulcer following gastro-enterostomy.

Lastly, we believe that the Finney pyloroplasty is a very excellent operation, but that it should be used in cases in which it is indicated, and not because it is an excellent operation.

Dr. B. A. Bobb (Mitchell): I should like to ask the essayist, in closing the discussion, to point out the advantage of a Finney pyloroplasty over resection of the pylorus and the ulcer at the same time, and then doing a posterior gastro-enterostomy. As both men have just stated, we should follow up what we are best adapted to do, and this method I have been pursuing for a number of years with very good results, so far as I have been able to follow the cases up. If you want to select your cases, you cannot resect the stomach that has indurated tissue and is bound down, but, in the majority

of cases where the indurated tissue is circumscribed, you can lift the duodenum and stomach up and resect them. I do not see, especially in older people, the advantage of pyloroplasty when you are getting rid of the whole ulcer-bearing area.

I would say this, that in doing a posterior gastro-enterostomy, without doing anything to the ulcer in either the stomach or in the duodenum, a certain percentage do not get cured. There is no question about that. We have had quite a few patients go to Rochester for treatment, and there are cases following gastro-enterostomy that are still not cured and are still having trouble. I have examined these with the *x*-ray and found that the stoma was closed. I recently had a case in which I did not resect the pylorus and ulcer area, and it was closed in six months after a posterior gastro-enterostomy was done. I was wondering if there is any possibility of this closing. It is very essential to do a resection of the pylorus in some individuals if you would get good results. I have demonstrated this in at least two cases, one from Rochester and one from my own practice, so that I have arrived at the conclusion; from the work I have done and from following up these cases, that in the majority of cases a resection and then a posterior gastro-enterostomy is the best, which can be done in from fifteen to thirty-five minutes, if the case is not bound down. While it is well to select our cases, if possible, we cannot do so always.

Relative to hypertrophic stenosis in infants: That is a different proposition, and I shall not touch on that phase of the subject.

Dr. G. G. Cottam (Sioux Falls): There are a few operations in surgery that are so delightfuly simple that one wishes they could be used universally in the case for which they are used at all, and Finney's pyloroplasty is one of them. To my notion, technically, it is so much more easy than posterior gastro-enterostomy that one would like to do it in every case, especially with the present technic of abandoning clamps altogether and using simple traction stitches that are so adequately set forth in the illustration. But whether my experience has been different from others or not, I do not know, but I only rarely see cases in which a Finney pyloroplasty is the better of the two operations to do. I mean by that the bulk of ulcer cases I have seen have been in the first part of the duodenum, have occupied enough of the area so that an excision in a direct pyloroplasty would take out a good portion of the lumen of the duodenum, or else there has been such a binding down of the structures that mobilization of the duodenum is out of question. The cases in which the Finney operation is really practicable are that class of cases we do not see very often—at least I do not—of small circumscribed ulcer. These cases do not come along very often for me.

I had a case last Thursday in which I would like to have done a Finney operation, but I did not. I should have removed about one-half of the lumen of the duodenum in the affected area to get the ulcer excised in the area in which I would do the pyloroplasty, and it occurs to me that exposes the patient to two dangers. The first danger is the very thing we want to obviate, and that is the formation of a post-operative narrowing, and, secondly, by getting so close to the visceral supply one would run the chances of post-operative hemorrhage. So in that case I did, as I do in the bulk of cases I have had to operate on, first a posterior gastro-enterostomy by the usual technic, and then I went back to the ulcer area and infolded it with two rows of sutures so that it was completely obliterated. I think by that I did two things. I really strictured the duodenum, but I also left an adequate opening behind to take care of the stomach contents. I think by so stricturing the duodenum I did practically what we used to do when we excluded the pylorus. We do not do that so much nowadays—at least, I do not. At the same time, I think it is a useful thing to do in these cases. The cure of the ulcer is just as important as anything else. It is what we are really trying to do if we do nothing but a gastro-enterostomy. It occurs to me that infolding, if we cannot do excision, is the next best thing.

Dr. Hedblom: In my previous remarks I did not take up the various alternate methods. We often do a sleeve resection of the lower stomach and consider it a useful method, and we occasionally do a Ramstedt operation. We always deal with gastric ulcer by excision or cautery or by total resection.

As for the gastro-enterostomy opening closing, I dare say there are cases in which the opening does close, but my impression would be they constitute a very small percentage, because we have had many of these cases come back, have *x*-rayed them, and found the stoma open. It is important to make the gastro-enterostomy wide enough to have something to go on.

Dr. Riggs (closing): I appreciate this discussion very much because it has helped to clear up certain points. In the good old days we used to argue on "tonsillectomy versus tonsillotomy," I am glad to know that the same condition has not developed here. I tried to make it plain that it was not a question of comparing the various methods, but to remind you of a method you had heard of in your student days or read about later, and then had forgotten. It is natural that gastro-enterostomy in this part of the country should be the operation of choice. There is no objection to a gastro-enterostomy by the Mayo method, with the one exception that I have mentioned. There is no objection to gastro-enterostomy and resection of the pylorus except that it is unnecessarily radical for routine treatment of ulcer. There are contra indications to a pyloroplasty. Do not try to do a pyloroplasty unless you have a pylorus and duodenum that you can get up into the field sufficiently. You must be able to mobilize the duodenum. For a benign stricture of the pylorus a pyloroplasty or gastro-pyloro-duodenostomy is the ideal operation.

Pyloroplasty is ideal also in many cases of active bleeding ulcer, provided you can get the pylorus up. You had better deal with the active ulcer by excision, and also do the same in cases of recurring ulcers of the stomach and duodenum unless they are too large. If they are so big that pyloroplasty is impossible I would do a resection. I do not claim that pyloroplasty is a cureall. It has its place, and I wanted to remind you surgeons of it. I admit I am enthusiastic over it. I have done more pyloroplasties for pyloric ulcers than I have gastro-enterostomies. I have had 33 done for one of the three definite indications. I have had one

death eighteen months afterward in a woman who became pregnant and died of toxemia of pregnancy. She gained in weight, became pregnant, and died. I could hardly attribute her death to the pyloroplasty. I have had one case of recurrent ulcer which was gastric rather than duodenal, the one I showed you this morning. I do not think a gastro-enterostomy allows as easy access to an ulcer as does a pyloroplasty.

A pyloroplasty in these cases gives less trauma. In other words, you have not done as much work to the patient, and you still have the stomach emptying in a normal manner.

PAPILLARY ADENOCARCINOMA OF THE KIDNEY IN A YOUNG WOMAN OF TWENTY-THREE YEARS, WITH A PECULIAR PELVIC FILLING DEFECT*

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MINNEAPOLIS

Carcinoma of the kidney is found in from 5 to 7 per cent of all kidney tumors. Its origin may be in the pelvis or in the cortex. In the pelvis it is probably secondary to irritation in the form of infection, or stone, or both, and has no embryologic significance. Carcinoma, originating in the cortex, in most instances, has its origin in embryologic tissue.

This report is made because a carcinoma of the kidney in its growth produced a very unusual pyelographic shadow, which made exact diagnosis difficult and because in no other instance have we observed renal carcinoma in so young a patient.

The history of severe bleeding, which was the chief complaint, would make one suspicious of malignancy in an older subject. The onset of the symptoms, following an acute severe attack of influenza, made us suspicious of an infection which had completely destroyed the right kidney, together with possible erosin of small vein.

The history is as follows:

Family History—Mother died of tuberculosis; father, living and well; brother and sisters, all in good health.

Previous Illnesses—The patient had a severe attack of measles, but no other infection that she remembers.

Personal History—Unmarried; menstural history, normal; habits, good; no venereal infection.

Present History—Her trouble began in July, 1919, about fifteen months before operation. At this time the patient was recovering from a severe attack of influenza. During her convalescence she noticed that her urine contained blood. About September, 1919, two months after the onset of the hematuria, the patient was cystoscoped by her home physician, as tuberculosis of the kidney was suspected. A diagnosis was not made, as only one ureter was catheterized. In October, 1919, the patient had a very severe renal hemorrhage from which she was rather slow to recover. Eventually she became perfectly well and remained so for the next seven months or until May, 1920. At this time the patient had another bad hemorrhage and was treated for nephritis by her home physician. She was kept in bed on a milk diet for about eight weeks during which time she became very weak. The blood continued in the urine.

Physical Examination and Findings.—The patient was seen by us on October 1, 1920. She was anemic, had lost considerable weight, was very weak, dyspneic, very pale, and greatly resembled a patient who had had a very severe, recent hemorrhage.

The hemoglobin at this time was 43 per cent; red cells, 2,776,000; white count, 5,150. The urine contained a great quantity of blood. The original *x*-ray examination of the kidneys, ureters, and bladder was negative. The general physical examination was negative except that the right kidney was palpable, but not enlarged.

The patient was cystoscoped, at which time the bladder was found to be normal except that it contained a quantity of hemorrhagic urine and clots. Both meatus appeared normal. From the right side practically clear blood could be seen coming from the ureteral opening. The urine appeared clear from the left side, the spurt being normal. The ureteral catheter passed without difficulty on the left side, and the urine flowed rapidly. On the right side the catheter met obstruction at the ureteropelvic juncture. This

*Presented before the Chicago Urological Association March 24, 1921.

was passed with some difficulty, but no urine came through the catheter. The catheterized urine from the left side contained pus. A specimen from the right side was not obtained.

A differential functional test was not attempted. A pyelogram of the right kidney was made to determine the cause of the bleeding, using 20 per cent sodium bromide solution.

A description of the pyelogram is as follows: The pelvis is greatly dilated. The minor calyces are practically effaced. The ureteropelvic juncture is broad. The outline of the pelvis is indistinct except a narrow area about a quarter of an inch broad, which is in the position that the upper calyx might occupy. This shadow is shaped somewhat like a scythe and is one and one-half inches long. The shadow of this portion of the pelvis is very distinct as compared with the rest of the shadow.

Pyelographic Diagnosis—Dilated renal pelvis, probably pyonephrosis, with bleeding.

The distinct area above mentioned, was not correctly interpreted, as the examination of the specimen will indicate.

Complete diagnosis was (1) pyonephrosis of the right kidney with bleeding, (2) renal tumor.

Nephrectomy was indicated if the condition of patient would permit. The shadow produced by injecting the pelvis with bromide solution was indistinct, except the upper portion, due to the fact that only a small amount of bromide was able to surround the tumor, which had grown into the pelvis. The distinct line or more dense shadow mentioned above was evidently beginning retraction, due to the presence of the carcinoma in the upper pole. This retraction is a very frequent diagnosis filling defect caused by renal tumor. Dilatation of the pelvis of a kidney containing carcinoma, as found in this pyelogram, has been infrequently observed by the writer in rather a large experience in pyelography, at the Mayo Clinic and at the University of Minnesota.

Dr. Braasch, in his book on pyelography, mentions the following as deformities resulting from renal neoplasm:

1. Retraction (a) one or more calyces or (b) the true pelvis.
2. Encroachment on the pelvic lumen, causing (a) flattening of the general pelvic outline, (b) narrowing of the individual calyces, and (c) obliteration of the true pelvis.
3. Secondary necrosis.
4. Abnormal position of the renal pelvis.
5. Deformity at the ureteropelvic juncture.

A deformity, such as was found in this case, is not mentioned in connection with renal neoplasm. Papilloma originating in the pelvis of the kidney,

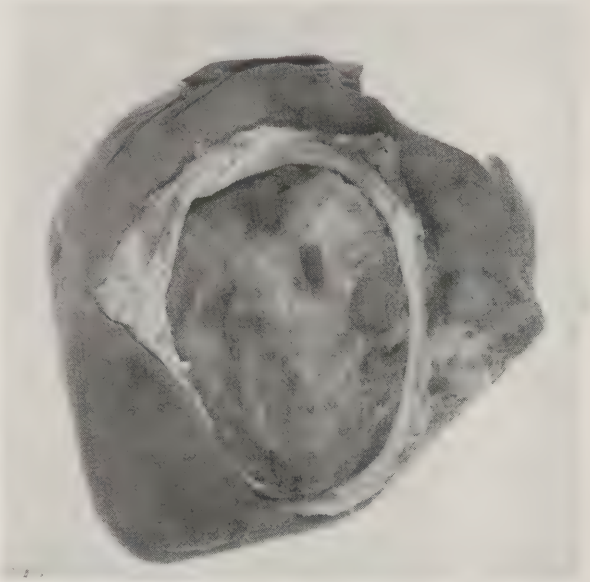


Fig. 1. The pelvis has been cut and turned back, exposing the tumor, which entirely filled the pelvis.

together with bleeding and the formation of blood-clots, will frequently distend the pelvis so that a shadow resembling hydronephrosis or pyonephrosis will be found.

The age of this patient and the history of the onset of the bleeding, together with the length of time that had elapsed from the beginning of the symptoms to the time of operation (fifteen months) without demonstrable renal enlargement, made the diagnosis of renal tumor rather improbable in spite of the severe renal hemorrhage. However, new growth of the kidney must always be suspected in the presence of a severe hemhorrage, even in young individuals. Nephrectomy in this patient was indicated. An exact diagnosis of the lesion present was attempted (1) because the patient was not in condition to withstand operation when she was first seen, (2) because the history suggested infection, and (3) because we were not justified in advising surgery until we knew the diagnosis.

Transfusions were done, and the patient kept in bed for several days before operation. She was greatly improved after the transfusions and withstood the operation very well.

Operation—When exposed, the kidney was of medium size, with a greatly distended pelvis. The kidney was not adherent and was delivered

with little difficulty. No glands were palpable. There was no extra renal involvement demonstrated. The pelvis of the kidney when palpated was not easily compressed. A small, hard nodule could be felt in the upper pole. The ureter was dissected downward as far as possible and ligated in the usual manner. The pedicle was dissected and the vessels tied individually. After the specimen was removed the ligature on the ureter was cut, but the contents of the pelvis could not be expelled by pressure. We expected to find a quantity of blood or pus, or both. A scissors was inserted into the cut end of the ureter, and the pelvis was incised. (See Fig. 1.) A tumor filling the pelvis was found and thought to be a blood-clot which had organized.

The specimen was immediately sent to the Pathological Laboratory at the University of Minnesota, and Dr. H. E. Robertson, Chief of the Laboratory, was asked for a gross and microscopic description, together with a diagnosis.

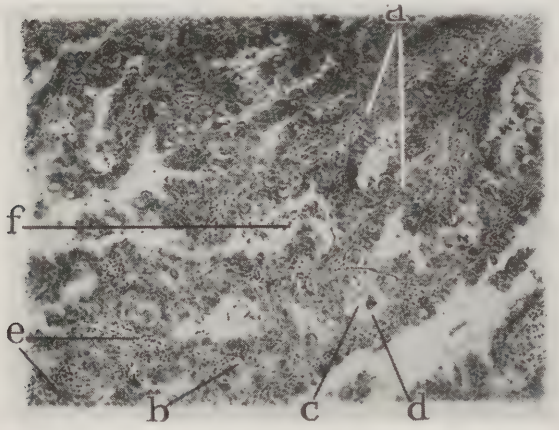


Fig. 2. Microphotograph high-power magnification.

Dr. Robertson's description and diagnosis are as follows:

The specimen consists of a medium-sized kidney with enormously projecting pelvic portion, which on section is shown to be occupied by a very large, smooth-surfaced tumor, which dilates the pelvis and almost completely occludes the orifice of the ureter. This tumor projects by a neighboring nodule from one pole of the kidney near the hilus. The entire tumor measures fully 7 cm. in diameter.

On section of the kidney the tumor is seen to occupy practically the entire medullary portion of the kidney, which it has destroyed and is itself composed of softened grayish tissue mottled with reddish areas of hemorrhage and necrosis. The cortical portions of the kidney proper are thinned and, in most places, sharply demarcated from the tumor substance, but in certain areas the tumor extends practically to the capsular margins with marked connective-tissue thickening of the same. The tumor mass is roughly oval in shape.

Microscopically (see Fig. 2), the tumor is found to be composed of interlacing network of delicate connective tissue trabeculæ (a), often arranged in papillary form and lined by large cells having a varying amount of clear cytoplasm and oval or round nuclei with prominent nucleoli (b). The cytoplasm often shows vacuoles, but occasionally enormously swollen cells (c) are seen with no evidence of any solid content. Stains for fat show that these vacuoles have not been occupied by lipoid substance. Occasional alveolar formations are seen with definite lumina. A few cells show mitotic figures. The point where the tumor encroaches on the kidney substance (not seen in this section) is fairly well limited, but occasional nests of tumor cells are seen in the kidney pulp. The stroma of the kidney proper shows marked atrophy of the secreting structures with infiltration of the stroma by lymphoid cells (e) and polymorphonuclear leucocytes. Polymorphonuclear leucocytes are also seen in occasional groups in the stroma strands of the tumor proper (f). A few multinucleated or syncytial groups of cells also appear, and there is beginning calcification, not only of these groups of cells, but also in the connective tissue thickening, which partially limits the outlines of the tumor mass.

Diagonosis: Papillary adenocarcinoma of the kidney, of clear cell type.



Fig. 3. Black-and-white drawing of pyelogram 20 per cent solution of sodium bromide used.

This patient is now in good physical condition. She has gained fifteen pounds in weight. There is no evidence of recurrence.

Although conclusions cannot be drawn from a single case, a study of the findings herein de-

scribed, suggests to us the following observations:

1. Renal carcinoma may occur in a young person.

2. Either with or without renal stone, renal carcinoma should be suspected in every person in whom there is a history of severe bleeding from the kidney.

3. The retraction of a single calyx, with a more distinct outline than the rest of the pyelographic shadow, even when accompanied by pelvic distention, should make one suspicious of renal tumor.

4. Renal carcinoma may exist for a year or more without palpable enlargement of the kidney.

UNITED STATES PUBLIC HEALTH SERVICE*

By L. A. Walker, M. D.
Supervisor District No. 10.
MINNEAPOLIS

Mr. President and Gentlemen: I have no formal paper to present to you. I am here to answer any questions you may want to ask me about health work. I might say, however, the Public Health Service is one of the oldest bureaus in the United States Government. It is 122 years old, and it had on the east and west coasts a dozen or more hospitals to take care of the Merchant Marine, and when the great war was over the care of the ex-service men was put over on the Public Health Service. We have now approximately 80 hospitals with 30,000 patients.

On the 16th of May of this year the Secretary of the Treasury issued an order transferring from the public health all the insurance work, all examinations of ex-service men, while the Public Health Service retains hospitalization and treatment; and in line with this order we are decentralizing the work. We propose to have in this state four branch offices, one in Aberdeen, one in Sioux Falls, one in Pierre, and one in Deadwood. An ex-service man can go into one of these offices and file a claim for compensation, be examined, and send his claim to Minneapolis, where it will be paid, instead of referring it to Washington. We propose to have in Minneapolis a disability-rating board, which may pass upon a man's claim. He will be rated there, and his compensation will be paid from there. Later on, as that becomes more perfected, we propose to decentralize further. In other words, an ex-service man can go straight home and get action immediately. As soon as his claim is filed it will be sent to Minneapolis. His examination will be made, and a record of that examination will be forwarded to Minneapolis. In the meantime we shall be looking up his military record, etc.

There are many examiners. If the examiners will make their examinations complete and thorough, we shall not send them back to them for corrections. The examination as it comes in to us in many instances means nothing to me or to my office, but it means everything to the ex-service man, and, unless a complete examination is made and a report of it sent in, the ex-service man is going to suffer by it, because we want the ex-service man to have everything we can give him, and we cannot give him what we would like if the examination is not complete. Some of the doctors when we send a record of their examination back take it as a personal matter. It is impersonal with us. We want the ex-service man to get everything that is coming to him.

I have a few words I would like to say to those who are examiners: It is important that the physical findings agree with the diagnosis. In other words, a man will have a diagnosis made of something wrong with his heart and the physical findings will not show the diagnosis or will not confirm it. Again, the reports of examinations are correct, but many times are sent in unsigned.

Here is a sample of a diagnosis I would like to read to you (reading).

When we sent the report of that examination back to the doctor, he said, "My examination is all right. It goes." All right, the poor claimant is the one who suffers.

As I have previously said, we want to give the ex-service man everything possible, but, unless the doctor in the field makes a complete ex-

*Presented at the Fortieth Annual Meeting of the South Dakota State Medical Association, Aberdeen, S. D., May 24 and 25, 1921.

amination and furnishes us with a good record of the same, we cannot give the man the amount of compensation coming to him.

Is there any one who would like to ask me any questions?

Dr. B. A. Bobb (Mitchell): I have had a number of cases in which I have tried to make thorough and complete examinations. For instance, a man was wounded in the arm, receiving a spiral wound, so that his hand was practically useless. He had lost considerable bone. The first treatment he received was in the form of a wrist-band or some kind of apparatus to hold it. I have had that man come to my office for re-examination. I have stated as the result of my examinations that he cannot improve; that he will always be that way. He is trying to get compensation.

Dr. Walker: Did they ask for a permanent and total disability examination of him?

Dr. Bobb: They asked for a complete examination.

Dr. Walker: They will not give him a total and permanent disability rating from these examinations?

Dr. F. E. Clough (Lead): The examiner cannot make a complete and physical examination without the use of the *x*-ray. According to the rule promulgated recently, the examiner cannot make use of the *x*-ray in helping him to make a diagnosis unless he has authority from Minneapolis to do so.

Dr. Walker: On the 16th of May the auditor and dispersing clerk from Washington issued an order calling for specific authority to use the *x*-ray in each case. In making an examination you can use the *x*-ray and have the bill paid on your authority.

Dr. Clough: Understand, I did get the authority.

Dr. Walker: That was sent to you authorizing it and you signed your name to it. If you have signed authority for the use of the *x*-ray and send the bill for that service it will be paid. You received a certain form that was sent out to be filled in. There were no other new forms of examination sent out. That happened since the 16th of May, two weeks ago, and our office should have sent you the forms to authorize it. When you authorize an *x*-ray examination and you make that examination, we will pay the bill.

Dr. Clough: How complete should the record of the examination be? We did not make out the old war record that had been sent in before of which you have complete files.

Dr. Walker: There are 625,000 case-records on file now. We cannot go through these cases to find that one man's case-record.

Dr. Clough: I always thought that was a waste of time on the part of the examiner to have to go through and ask the applicant all that stuff when it is already on record.

Dr. Walker: It is not a waste of time. It is necessary. A man comes in and claims he was injured, that he received a gunshot wound of the arm. Later on he comes in and claims he has bronchitis or something else. The thing we want to know in connection with this military history is, whether he had bronchitis in the army.

Dr. Clough: I supposed it was put in the original report.

Dr. Walker: It was not in the original report. Such a man may come back in six months and file a claim for something else, and it does not show anywhere. If we have got additional medical evidence to file with the original claim there would not have been any necessity for that, but examiners do not do it, and we have to ask for this other stuff.

Dr. G. G. Cottam (Sioux Falls): Are the neuropsychiatric cases increasing?

Dr. Walker: They are. We feel we shall have for a short while only two classes of cases, the neuropsychiatrics and the tuberculosis cases. The other men will have reached their peak and will have been cured. There are very few emergency cases due to service after two and a half years. A man must be put back into the physical condition he was in when he went into the service, and when this is accomplished his compensation ceases. If in a given case the original diagnosis was tuberculosis he gets $80.00 or $90.00 a month. Later on, if examination shows that he has bronchitis and not tuberculosis, his compensation is cut. He comes in to find out why his compensation is cut down to $50.00 per month, and it is simply because he has improved. As he improves his compensation is lessened.

Dr. Bobb: I have had a patient under observation for five months who claims he contracted tuberculosis in the army. I have re-examined him four times and can find no evidence of tuberculosis and have so reported.

Dr. Walker: I should like to get the names of these patients in order to get them cleared up.

OFFICE DRESSINGS*

By Leon C. Combacker, A. B., M. D.,
OSCEOLA, WISCONSIN

The purpose of this paper is to mention a few methods that are used in office dressings which make the work more convenient, time-saving, and sanitary. Nothing new is introduced, but a system is described which is very useful in taking care of either a small or a large number of dressings.

Probably the most common method of using gauze for office dressings is of using that which is sterilized by the manufacturer and packed in five or ten yard lengths in small cartons. These are suitable to carry in a grip, but to open a package, cut a piece off, and then get the remainder back in the package without contamination, is a rather difficult feat, at least it is done more easily with the aid of an assistant than alone.

Another method commonly employed is to have the gauze cut, wrapped in muslin, and sterilized. This is the way any nurse will prepare it. This method is fairly convenient, but still there is a package to be opened and done up again, and it usually requires the cutting of gauze for small dressings. We would not expect a housekeeper to keep her sugar, spices, etc., wrapped and pinned up in pieces of cloth. She uses jars or similar containers and finds them much more useful.

For a number of years the Southern Pacific Hospital has used two enameled jars for gauze used in the dressing-rooms. Each jar is about seven inches in diameter by eight inches tall. In one jar is kept the ordinary, small, gauze sponge, which is about three inches square. This is just the right size for a finger dressing or for any area about the hand, in fact, it fits over the finger like a finger-cot. The other jar contains the larger sizes of gauze, which are about six inches square. These two sizes of gauze will usually take care of any dressing without requiring any cutting. These jars of gauze are readily sterilized in the steam sterilizer by removing the covers during the process, or, if a steam sterilizer is not at hand, they may be sterilized in an oven. In answer to a recent letter of inquiry, the superintendent of the Southern Pacific Hospital writes: "We are still using the two enameled jars and find them most satisfactory."

With gauze in containers as described, it is easy and pleasant to do a dressing. If a finger is to be dressed, the dressing forceps is taken out of the lysol solution or electric sterilizer, and a small gauze sponge is taken out of the jar and laid over the finger. It is not necessary to wash the hands, as no gauze is touched by the hands. This is preferable to the method often used which consists in trying to sterilize the hands and then proceeding to cut and handle the gauze, which is used for this and future dressings—not a good surgical procedure.

A good method of using gauze strips is to have the glass tubes in which they come, slipped into holders made of staples and fastened in the wall. A tube of the one-half inch width and one of an inch width may be held in place in this manner over the dressing table. More varieties of packing may be used if desired.

For the adhesive rolls, it is convenient to have them on spools of assorted sizes and strung on a curtain rod. Bandaging is a lost art, and most men require a lot of adhesive strips to keep their bandages in place. By having the assorted sizes on the rod, it is not necessary to waste any time looking for the adhesive strips, or to cut large strips off the spool. Catch the end of the size desired and pull off as much as needed.

Probably the best way to purchase bandages is to buy the rolls one yard wide. The adhesive may also be bought in widths of one foot or more. The gauze, of course, will be bought in one hundred yard bolts. The saving in expense by buying in quantities is considerable, and the bandages, adhesive and gauze, may be cut in any sizes desired.

These methods in office dressings are simple and make the work systematic. We have used them for ten years and find them very satisfactory.

DISCUSSION.

Dr. Otis H. Epley (New Richmond, Wis.): There is not a more important item in the surgeon's office work than dressings, although it is very often overlooked. There is no place wherein the fads and fancies will creep in more rapidly, as to dusting powders, one specific antiseptic for a certain kind of germ, a new ointment, etc., and, if we do not watch ourselves, we keep changing our methods from day to day according to the way we feel—it is sort of a temperamental affair.

*Presented at the annual meeting of the Soo Railway Surgical Association, at Minneapolis, December 17 and 18, 1921.

Simplicity is the big thing in all work, for it does away with contamination, makes our work more methodical, and assists us in doing rapid, clean-cut work. This is what Dr. Combacker wishes us to read between the lines. Very often we forget when amputating a finger of a farmer that it does not as often heal by primary intention as does that of a mechanic, also forget perhaps for the time that the farmer's whole existence depends upon germ action. He is in intimate contact with all forms of germs. We are apt to be careless after we have treated a case for some time, allowing some element of technic to be neglected. We find the case is not progressing as rapidly as we had hoped, and we start branching out into new methods, testing, changing the dressing, using dry heat or moist, covering it up with an impermeable substance and then parboiling the finger. Perhaps a blizzard will prevent the farmer from coming in and after a couple of days he becomes inquisitive, takes off the dressing to investigate the matter, cannot replace it, and returns in two or three days with the finger in better condition than when we last saw it. All the wound required was fresh air and rest.

Every physician should sterilize his own gauze. If I want to wrap the gauze in a certain way this can be done only by myself, and the safest method of sterilization is by steam done by one's self. If the wife of the mechanic or the farmer can afford a steam cooker, the surgeon certainly can, and it is easily handled. I prepare gauze in sizes as I want to use them, then place them in a Mason or a straight-necked jar, put them in the sterilizer, and carry it to the house or some other place where there is a fire, and sterilization is accomplished in a few minutes.

BOOK NOTICES

Advanced Lessons In Practical Physiology. For Students and Practitioners of Medicine, by Russell Burton-Opitz, M. D., Ph. D., Associate Professor of Physiology, Columbia University, New York City. Octavo of 238 pages with 123 illustrations. Philadelphia and London: W. B. Saunders Company, 1920. Cloth, $4.00 net.

This is a collection of experiments for practical physiology. It is well illustrated and the directions given clearly. No attempt is made to see if the student really understands what he is doing or to try to stimulate observation. This is supposed to be done by the instructor. The term *advanced lessons* is to distinguish it from *elementary*.

The experiments given in any laboratory course necessarily depend on the apparatus available. Most of the experiments given are taught in some form in nearly all first-class colleges.

F. H. Scott, M. D.

Keen's Surgery. Volume VII. By Surgical Experts. Edited by W. W. Keen, M. D., L. L. D., Hon. F. R. C. S., Eng. and Edin., Emeritus Professor of the Principles of Surgery and Clinical Surgery, Jefferson Medical College, Philadelphia. Octavo of 855 pages, with 359 illustrations, 17 of them in colors. Philadelphia and London: W. B. Saunders Company, 1921.

This is one of the two supplementary volumes designed to bring Keen's "Surgery" up to date and to make available for the surgery of peace the lessons taught by the Great War.

The contributors to this volume number twenty-four, illustrious American and English surgeons, nearly all of whom actually served in the fighting areas, and they have carefully detailed the methods of treatment as carried out and proved at the front and in the large base hospital centers where the most extraordinary opportunities were available for study of surgical conditions.

The volume is profusely illustrated. The colored plates depicting the various stages of gas gangrene are particularly true to life.

The two chapters on organization of the medical department of the army and navy are more of historical interest than of practical value. On the other hand the chapters on tetanus, shock, transfusion, wound bacteriology, fractures, and neurological and orthopedic surgery render the volume of considerable value to anyone doing traumatic surgery.

Roscoe C. Webb, M. D.

Medical Electricity, Röntgen Rays and Radium. With a practical chapter on Phototherapy. By Sinclair Tousey, M. D., Consulting Surgeon to St. Bartholomew's Clinic, New York City. Third edition. Thoroughly Revised and Greatly Enlarged. Octavo of 1,337 pages with 861 practical illustrations, 16 in colors. Philadelphia and London: W. B. Saunders Company, 1921. Cloth $10.00 net.

The author, after defining electricity, discusses in detail the physics of static and dynamic electricity. One chapter is devoted to electricity occurring in animals and plants. The electrocardiographic tracing of the electric currents produced by the contractions of the heart muscle is an important example.

A section devoted to physiologic effects of electricity discusses in detail the electrocardiograph and its practical application. Electric burns, accidents, and deaths are freely illustrated.

Electrodiagnosis, as well as electric medication of various human ailments, is thoroughly explained. Skin affections evidently offer the most popular field of treatment. To those interested in electrotherapy this book offers a ready reference. Electricity in nervous disorders is extensively dwelt upon.

All *x*-ray apparatus, various *x*-ray tubes and methods of plate taking are described in great detail, as is also röntgenotheraphy. The chapter on *x*-ray treatment of goitre, Hodgkin's disease, and the anemias is especially valuable. The final chapter is devoted to radium therapy.

The book with its complete index is of great value alike to student, general practitioner, and specialist.

Arthur A. Wohlrabe, M. D.

THE
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FOREIGN MEDICAL NOTES

A recent meeting of the British Medical Association at Newcastle, England, was more than tinged with topics that entertained the public press, as well as the medical men in attendance. It is quite evident, too, that the after-effect of the war still is uppermost in many medical minds, due, perhaps to a long-continued strain which has not been relieved. How could a nation forget its war medical experiences, particularly when the personnel of the medical profession has changed so materially? Shortage of doctors, almost all of whom were in more or less intimate contact with injuries and disease for seven long years, made it impossible for the medical body politic to forget its sufferings. It is not strange, therefore, that subjects such as psycho-analysis, psychotherapy, and mental suggestion should occupy much time in the Association's discussions.

Some of the debates came very near reviving the long-lost subject of hypnosis, or hypnotism. Most of those who were interested in the debate defined the limitations of suggestion in the treatment and cure of disorders of the nervous system, and issued warnings to the public in regard to their dealings with unqualified practitioners. A "Harley Street" specialist said "the best kind of mental suggestion is the one dealing with a happy marriage and a happy home-life." This one sentence alone almost covers the field of the application of suggestion, for who can do much with a patient who suffers from unhappiness? The physician and the priest are usually the only ones who know the deep-rooted cause of many nervous and mental troubles. Of course, there are many people who have every reason to be happy as far as one can tell, who delight in exploiting their symptoms to anyone, in any place, who will listen.

One disadvantage, said one man, lies in a proper recognition of the value of these various methods,—a very important point and one ignored by many medical and non-medical men.

The value of rest, together with proper logical suggestion based upon reasoning, and explaining to the disordered one the necessity of understanding and coöperating, was strongly emphasized. A woman, Dr. Boyle, advocated the necessity of establishing beds in hospitals for those who were "unhappy," for under such circumstances rest, isolation, and suggestion could be carried out successfully. However, if all the unhappy people in the world, either constitutionally or domestically, were to be so treated, it would require additional buildings all over the country. In the Old World, all of the palaces, chateaus, and army barracks would be crowded, and in our own country the demand for quarters would be equally great.

To treat nervous or borderland medical cases, suggestion should be under the supervision or in the hands of medical men. It is quite evident that all classes of people are under heavy pressure and strain, and, if their bodies are constitutionally imperfect, what must their nerves be?

Most of us are slaves to work, more so in the United States than in the Old World. We are harassed by telephones, typewriters, sudden and frequent calls for advice, and other machinery that drains and annoys. In the Old World the common people take things more leisurely: they get up later, play or rest in the middle of the day, and amuse themselves moderately in the evening. Do we?

The medical men of Great Britain seem to be a trifle peeved at another so-called "divine" healer, who believes in laying on of hands and soft, mild suggestive measures regardless of the character or type of a case he treats. The discussions of the British Medical Association will play into his and others hands, but it will pass as do all of the fads of the day.

France is progressive, medically speaking, sane

in her investigations, and not apt to jump at conclusions. Her newer hospitals are up to date, and her methods are satisfying. The American Hospital of Paris has been raising a large fund to build a larger hospital, and funds are flowing in slowly. Such an enterprise is most worthy, but as in all such cases the appeals often fall on dull ears. People are tired of hearing of sickness and hospitals, and would rather seek enjoyment with their money. Some of the hospitals in France are of the old-time order. Patients are confined in century-old buildings, wholly unsuited for the care of the sick. They are poorly equipped, with only lay management under religious orders, and lacking in heat, ventilation, and modern necessities. There are a number of fine medical schools in the larger cities, and the students are well trained.

Spain is still crude, hospitally speaking, and the only way one can find comfort in sickness is in a private hospital. Other hospitals are so indifferently run that one should not get sick in Spain, yet Spain has produced marvelous medical and surgical men, but more of this later.

NERVOUS DISORDERS OF THE DIGESTIVE SYSTEM

Differentiating between a nervous gastro-intestinal disorder and an organic disease is sometimes very difficult, and only by a careful survey of the history of the individual,—his ancestral history,—and especially a detailed recital of his symptoms and the conditions under which he suffers, as well as a physical examination with the various necessary tests, can one arrive at a satisfactory conclusion.

The supposition, is, that now, with our advanced methods of diagnosis, we are better able to localize organic diseases. That has proved true in the majority of instances. But in spite of that, there are a large number of people afflicted with "nervous" stomachs that are looked upon as organic cases, and these are the people that are not infrequently operated on for the removal of pyloric disorders, ulcers of the stomach, growths, or adhesions in and about the stomach and the upper intestinal tract. It is the wise man, therefore, who makes a very careful study of his case before he performs an operation on a definitely recognized nervous individual. One hears many times of operations for the removal of pelvic diseases in which there are referred symptoms relating to the stomach functions. It is quite well known that a displacement of the uterus sometimes causes symptoms wholly referable to the stomach. It is equally well-known that other displacements and disorders of the pelvis prompt vomiting and nausea and discomfort in the gastro-intestinal tract. Occasionally the removal of these offending organs produces a temporary improvement; but in the strictly neurotic individual, with a neurotic ancestry and history, such operations are not at all beneficial or lasting in their effects.

Then, too, one must consider the nervous control of the stomach and its digestive associates. The nervous mechanism of the stomach is maintained by Auerbach's plexus of nerves, situated between the longitudinal and circular layers of muscles of the stomach, and these nerves are dependent on the pneumogastric and the sympathetic nervous system for their proper functioning. Consequently, any symptoms which suggest a disorder of the vagus or the sympathetic nerves should be carefully considered before these people are operated on.

There is another group of nerve fibers which take their exit from the thoracic and lumbar regions of the spinal cord, which are known as the sympathetic system proper, and these nerves supply the blood vessels, glands, and smooth muscle fibers of the body, including those of the intestinal tract, the liver, and the pancreas. These can be associated, too, with the vagus, as well. Then there is another group which are non-sympathetic in type. These are the nerves which have their exit from the mid-brain and the hind-brain, and go down in the sacrum, supplying a few of the glands and a few of the organs. This group is known as the cranial-sacro-anatomic system, but, again, they belong to the great vagus system in the larger sense.

Now, it can be readily seen that disturbances that are due to disorders of these groups of nerves may be caused by various conditions, and they produce, in turn, a large number of symptoms. The majority of these vagus types of individuals are neurotics, and they are the ones who complain of hyperacidity, hypersecretion, and peristalsis with nervous vomiting. They have, too, nervous diarrheas, mucous colitis, and spasm of the rectal sphincter. And this latter class, by the way, are the ones who are treated by anal surgery for the relief of the trouble that exists, manifestly, high up in the brain. Then, too, with this group there are the atonic conditions of the gastro-intestinal tract, with their

constipation, ptosis of their organs, the achylia gastrica, and nervous anacidity. It must be remembered in this connection that the endocrine system is closely associated with these digestive organs and that they in themselves are dependent upon the proper working of the nervous apparatus.

These disorders may be differentiated from the organic diseases of the stomach and intestines by careful observation of the peristaltic movement of the entire tract, together with activity of the pyloric orifice. This is commonly shown in careful *x*-ray examinations, and is proved either a purely functional disorder dependent upon a nervous condition, or, if a disease exists, the *x*-ray will demonstrate it with sufficient precision so that a differential diagnosis may be made.

It is understood, of course, that all gastro-intestinal neuroses may be primary or secondary. They are primary when the nervous disorder is inherent in the stomach or intestines, in turn, and is reflexively affected either from the brain, the spinal cord, or such organs as the liver, the kidneys, etc.; and some authorities claim that eye-strain and focal infections are responsible for the various functional gastro-intestinal neuroses.

According to the experience of various observers, among them Friedenwald* 55 per cent of all gastric disturbances can be classified as neuroses, while 45 per cent represent the organic diseases. Heredity plays an important part, and the history of the individual is also important, for, if nervous, he is usually careless about the attention he gives to his diet and to his rest. The woman suffers more than the man. The common factors are work, worry, excesses, disorders of menstruation, reproduction, anxiety, sorrow, and disappointment, these conditions, of course, coming in the years of active life, between twenty and forty. And they may affect the robust and well nourished, as well as the broken-down and enfeebled individual. Consequently, we frequently hear of patients complaining of irritability, lassitude, insomnia, depression, and a feeling of malaise, hyperesthesia, or anesthesia, an accumulation of gas in the stomach or bowels, which frequently has no relation whatever to the character or quantity of food taken in. Usually these conditions have multiple symptoms; occasionally only one symptom.

*Friedenwald in Nelson Loose Leaf Medium.

The prognosis depends entirely upon the individual and his family and personal history; and the treatment consists mainly of proper rest, care, and attention to diet, largely for its psychological effect on the individual. Following a course of treatment, a change of scene and surrounding is very essential, and this must depend upon the type of individual with whom you are dealing. Psychotherapy, which really means a bolstering-up and encouraging of the nervous individual to feel that he can get better, is an important adjunct, together with mild massage and open-air treatment as far as it can be carried out. The drugs that have any beneficial effect upon such cases are simple things. Bromides for the properly selected individual, and iron and arsenic preparations for those who are lowered in tone, both bodily and mentally. The iron should be administered hypodermically rather than by mouth. Then, too, the careful direction of exercise and work thereafter is the one factor that keeps up the improvement and perhaps produces a cure.

Appended hereto are various things which come under these headings that I have tried to put before you:

GASTRIC AFFECTIONS:

Vagotonic Group—
- Cardiospasm
- Pylorospasm
- Peristaltic unrest
- Pneumatosis
- Nervous vomiting
- Eructatio nervosa
- Rumination
- Regurgitation
- Gastralgia
- Hyperesthesia
- Bulimia
- Parorexia
- Gastromyxorrhea
- Hyperchlorhydria
- Gastrosuccorrhea

Sympatheticotonic Group—
- Atony
- Incontinence of pylorus
- Acoria
- Anorexia
- Achylia gastrica
- Hypochlorhydria

INTESTINAL AFFECTIONS:

Vagotonic Group—
- Intestinal-fermentative dyspepsia
- Nervous diarrhea
- Enterospasm
- Spastic constipation
- Enteralgia
- Hyperesthesia
- Peristaltic unrest
- Meteorism
- Mucous colitis
- Spasm of anal sphincter

Sympatheticotonic Group—
- Atony
- Atonic constipation
- Paralytic ileus
- Relaxed anal sphincter

ADVERTISING BY MEDICAL MEN

This is not a tirade about the men in medicine who deliberately advertise themselves, but a plea for medical men and medical societies to give more of their acquired knowledge to the public for its own good. We sit in our office, practice on our patients, cut them up, and keep our mouths shut, or, if we open them, it is in self-laudation. What the public needs is more general medical information as to themselves. Why are we so self-centered in thinking the people need no enlightenment as to the care of the individual and the public at large? We could, if we would—and we must—take the public into our confidence and tell them the many things they ought to know. Instead of this fatherly attitude, we hide behind big words, abuse our fellow-men, and heap vituperation upon those who are unqualified, from our point of view, rather than take a little more time in showing people how to avoid medical pitfalls, and explain particularly in a more rational way as to why people are sick and what they should do to protect themselves against disease.

We jump on the osteopath, the chiropractor, the Christian Scientist and the so-called layer-on-of hands; and as a result we find ourselves discredited. The people love a dog-fight, and their sympathies are all with the poor dog that is seemingly being chewed up. Why not go about the matter in a different way? Every time we rail at a mode of treatment, we do the alleged under dog a service. Why not, therefore, exploit ourselves a bit? In order to do this professionally and ethically the information must come through the county and the state medical organizations, as well as through the individual practitioner. Then, too, we should coöperate more sincerely with the State Board of Health and with our county boards. The State Board still lacks support in backing by medical men and in sufficient funds appropriated by the legislature. Toward the latter body our influence must come through the physician of the senator or the representative or by published communications through the State Medical Association. Why not do as the chiropractors' association is doing, buy a page in papers of wide circulation once or twice a year, and thus endeavor, in a modest but scientific way, to enlist the interests of the reading public? Any paper will accept a paid advertisement if it is written in good faith and is of educational value to the public. In this way we might get back some of our lost prestige and, incidentally, the respect of the thinking public. For the unthinking or ignorant people there are health laws enough to keep them in line, but what we have lost by invectives we must regain by substantial and reliable information. Instead of new laws, let us make the most of those we have, and enforce those that are of public benefit. It would mean a determined stand for what is right, and we probably would be abused for our efforts, but with a dignity that should typify our profession we can win if we go about it in the proper spirit.

It was heralded in the daily papers that some one was sensitive about the appointment of Dr. C. E. Sawyer as a brigadier-general and personal physician to President Harding. Why? Because Dr. Sawyer announced that "there will be no change in the policies or management of the Sawyer Sanatorium, White Oaks Farms, Marion, Ohio." Did Dr. Sawyer object? Not at all. It meant to him a better advertisement than if he had had a column advertisement in a newspaper.

Of course, everyone knows that many medical men went to camps and to the front, and those who failed to come back are unrewarded; and many of those who returned lost their places in the world and lost all of their means of support. Many, too, who did glorious work and who deserved credit got none unless they "pushed" for it. Many others came back broken in health and spirit, but their going was actuated by a spirit of something that the stay-at-homes did not get.

Why worry! The wrong world will gradually right itself.

NEWS ITEMS

Dr. J. A. Evart has moved from Brainerd to St. Paul.

Dr. W. Z. Flower, of Minneapolis, will locate in Glencoe.

Dr. S. Sprecher of Tripp, S. D., is doing post-graduate work in Chicago.

Dr. J. N. Ewbank has moved from Rhames, N. D., to Northwood, Iowa.

The new Hillside Hospital at Beach, N. D., was opened formally last month.

Dr. S. G. Wright, of Minneapolis, has returned from a three months' trip in Europe

Dr. Flora M. Richardson, of Minneapolis, has been doing postgraduate work in Chicago.

Dr. J. A. Thabes was elected chief of staff of St. Joseph's Hospital of Brainerd last month.

Dr. C. S. Bossert, of Mora, has purchased a dwelling house to be remodeled for use as a hospital.

Dr. R. G. De Puy of Jamestown, N. D., was elected last month president of the Y. M. C. A. of that city.

Dr. K. V. Arminen of Duluth, who has been in Europe for the past four months, will be home next week.

The new class of nurses entering St. Luke's Hospital Training School of Aberdeen, S. D., numbers fifteen.

Dr. H. T. Sherman of Franklin has purchased the hotel of that place, and will remodel it for use as a hospital.

Dr. A. J. Clay of Fargo, N. D., has returned from Harvard, where he spent three months in post-graduate work.

Dr. O. F. Melby, of Thief River Falls, has been in Chicago, doing special work in eye, ear, nose, and throat diseases.

Dr. Chauncey A. McKinley, of Minneapolis, was married last month to Miss Kathryn Thorbus, also of Minneapolis.

Dr. Tiedmann, who recently resigned from the staff of the Heron Lake Hospital, Will remain in that city doing general practice.

Dr. J. L. Adams has moved from Morgan to Lamberton. He has purchased the practice of Dr. C. C. Walker of that place. Dr. Walker moved to Raymond.

Dr. Carl W. Waldron, of Minneapolis, was married last month to Miss Cora B. Fossen, of the same city.

Dr. Verne S. Cabot, of Drs. Willson, Cabot and Wohlrabe, of Minneapolis, left last month for Vienna, where he will spend the winter in special surgical work.

A conference of nutrition and health extension experts of twelve Middle Western states will be held at the University of Minnesota on Oct. 31 to Nov. 4, inclusive.

Among the eight new members of the faculty of the University of North Dakota, appointed last month, is Dr. Edward J. Scannell, the director of public health.

The Montana State Board of Health says that state leads all other states in its high infant and natural death rate. Efforts are being made to overcome this high rate.

Dr. Floyd T. Brown, of the Harvard Medical School, has been visiting in Minneapolis, and has made several addresses in the state on social work, one address being given at Hibbing at a state meeting of social workers.

The annual report of the visiting school nurse of Stutsman county, North Dakota, shows that she examined 4,165 pupils, and referred nearly one-half to physicians. Homes were visited and many clinics were held.

Dr. Robinson Bosworth, of St. Paul, was elected president of the Mississippi Valley Conference at its annual meeting in Columbus, Ohio. The next annual meeting of the Conference will be held in Milwaukee.

"The Kahler," a hotel and hospital combined, erected at a cost of $1,500,000, was opened in Rochester last week. It is eleven stories high, and has 400 rooms. The upper five stories are used for hospital purposes.

Dr. Theodor Bratrud, of the Warren Clinic at Warren will be chief surgeon of the new Memorial Clinic at Hallock, and a member of the Warren Clinic staff will move to Hallock to assume direct charge of the hospital.

Dr. Le Grange Byington, who comes from a tuberculosis sanatorium in Iowa, has been appointed medical director of the Lake Julia Sanatorium at Bemidji. Dr. Byington will spend much of his time doing tuberculosis work in the three counties that support the sanitorium. A new house, to cost $20,000, is to be built for the officers and nurses of the sanatorium.

The Minnesota Division of the American Legion has appointed a committee to consider the project of building a memorial hospital at Rochester at a cost of $250,000.

Dr. Charles D. Conkey, who moved from Duluth to California in July, died on Sept. 9 at the age of 65. Dr. Conkey was a graduate of Rush, class of '82, and had practiced many years in Duluth and Superior (Wis.).

Dr. Arthur Colberg, a recent graduate of the Medical School of the University of Minnesota, has accepted the postion as a medical missionary to China. He will take a year of interne work in the Rockefeller Institute at Pekin, China.

Dr. Harold S. Diehl, of Minneapolis, was married last month to Miss Julia Mills, also of Minneapolis. Dr. Diehl graduated from the Medical School of the University of Minnesota in the class of '17, and Mrs. Diehl graduated in the academic department in 1918.

The physicians of Duluth have appointed a committee to consider the plan of a physician's exchange, conducted on the lines of the Twin City Physician's Exchange, which has proved its great value to physicians in Minneapolis and St. Paul.

Dr. Pierre A. Hilbert of Melrose, died last week at the age of 56. At the time of his death Dr. Hilbert was a member of the state board of control, having recently been appointed to a second term of six years. He had been prominent in his profession for many years, and he served it well as a member of the state senate whenever medical legislation came up. He was a graduate of the University of Minnesota Medical school, class of '93.

POSITION AS SURGICAL NURSE WANTED

An experienced registered nurse desires a position as surgical nurse. Can take full charge of operating room. Available November 1. Twin City position preferable. Address 173, care of this office.

PHYSICIAN WANTED

Kensington, Minn., is in need of a physician at once. A Scandinavian preferred. Very big territory and the finest farming country in the state. Booming town. For further information, write E. T. Bjorklund, Kensington, Minn.

INSTRUMENT FOR SALE

One Universal Ophthalmometer and one adjustable table (new). First check for $115.00 takes it crated f. o. b. A few dozen instruments in first-class condition, bone forceps, plaster forceps, etc. List and prices sent on application. Address 166, care of this office.

FILING CABINET FOR SALE

A $150 McCaskey Cabinet Filing System in excellent condition, used but a short time. $75 takes it. Address Dr. Otto J. Seifert, New Ulm, Minn.

LABORATORY POSITION WANTED

Laboratory technician, college graduate, with two years experience wants position in clinical laboratory. Familiar with complement-fixation and vaccine work, basal metabolism and blood chemistry, as well as routine work. Address 168, care of this office.

PHYSICIAN'S OUTFIT FOR SALE

The instruments, library, operating-table, sterilizers, and microscope of the late Dr. James Halliday are offered for sale cheap. Address Mrs. James Halliday, Mohall, North Dakota.

PHYSICIAN WANTED

A North Dakota town of 300 population wants a good doctor. The field is a large one, the nearest doctors being 12 miles in one direction and 25 miles in three other directions. Territory well settled. Good roads and good crops. Good man can make from $7,000 to $10,000 a year. Address 174, care of this office.

FINE LOCATION FOR A PHYSICIAN

In a fine Minnesota village, population 420, and two smaller villages in the territory. Territory of nearly 30x50 miles without a doctor. Last doctor left to seek smaller field. Good office with living rooms for rent cheap. Nothing to sell. Address 171, care of this office.

INTEREST IN PRACTICE IN MINNEAPOLIS WANTED

An Iowa physician desires to purchase in Minneapolis entire or part interest in a high-class eye, ear, nose, and throat practice. Address 172, care of this office.

LOCUM TENENS WANTED

I desire an unmarried man to take my practice for three or four weeks from Oct. 14. Address 176, care of this office.

EYE, EAR, NOSE, AND THROAT PRACTICE FOR SALE

Well established in fine Southern Minnesota City. Will sell for a small cash payment and balance on easy terms. Address 169, care of this office.

POSITION WANTED

Position as röntgenologist and laboratory technician. One-half year's experience in *x*-ray and one year in laboratory routine work. Do not mind dropping *x*-ray work for position as laboratory technician alone. Write Sgt. E. Hanson, M. D., Fort Snelling, Minn., or call Midway 7600.

GOOD LOCATION WANTED

A high-grade young physician who has had an unusual training, some general practice, and two years with a leading surgeon of the Twin Cities, desires a good field, and would like one with near-by hospital facilities or a field that will help to start a hospital. Highest of references. Address 160, care of this office.

LOCATION WANTED

By a graduate of a Class A school and several years' experience. Can do good work in any of the branches of medicine or surgery. Willing pay a reasonable price for a good practice. Address 164, care of this office.

THE
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WORKMEN'S COMPENSATION LAW*

BY THE HONORABLE S. A. TRAVIS
Deputy Industrial Commission of South Dakota
PIERRE, SOUTH DAKOTA

MR. PRESIDENT AND MEMBERS OF THE SOUTH DAKOTA MEDICAL ASSOCIATION:

My talk to you will be informal, and I shall discuss the subject from the viewpoint of what I find in administering the law as it affects workmen's compensation. My talk probably will not be as smooth and flowing as that of one of you gentlemen would be who is called as an expert to answer a hypothetical question as to how long probably disability will continue in an imaginary damage suit after a man had obtained the last dollar he knew he could get.

In the first place, I want to say that the workmen's compensation law is a law based on an entirely different principle from the old-established damage claims proposition, in which it was a case of getting all you could get from everybody that was connected with it. The theory of the law was to scrap all old policies and establish a system of relief for the average workman when he was injured in his employment. To get the full benefit and intent of the law, it is necessary for those connected with it to meet it in the spirit in which it was conceived.

The average workman is not in a position to pay large sums of money for medical and surgical relief, as others might be, and, as I understand, it is the custom of the medical profession to charge. To a certain extent at least doctors base their charges for services on the ability of the patient to pay for such services. That is a policy which I have not attempted to discourage, and I have endorsed it as an official in charge of this work. In determining their fees, some physicians take the position that they are dealing with an insurance company with plenty of money, and they want to fix their fee on that basis, when, as a matter of fact, the alleged insurance company, as a rule, pays the bill which ultimately goes back to the victim of the accident in some form or other as to the cost, and the matter of abiliy to pay is taken into consideration in fixing the fee. The fee should be on the basis of the ability of the patient to pay, and not of the insurance company who protects him. The insurance company could, as a matter of fact, if it so desired, pay the fee to the patient, and the doctor would have to look to the patient for his compensation, instead of to the company. But, as a rule, the insurance companies themselves pay the doctor so as to be sure he gets his money, and as long as his bills are reasonable in every way they want to protect him; but when they become unreasonable the company does not feel inclined to meet them in that way.

The question of fees in this state I can best explain properly by quoting the statements of

*Presented at the Fortieth Annual Meeting of the South Dakota State Medical Association, Aberdeen, S. D., May 24 and 25, 1921.

Dr. Morrell, who was for many years at the head of the Medical Department of the Workmen's Compensation Commission. He stated before an investigating committee in regard to the working of the law that the Washington fee-bill was the highest of any state in the Union, and was the highest fee-bill of any country or state in regard to workmen's compensation; but in that he made an error because the average fee-bill charge in this state is far beyond the Washington or any other fee-bill I have found. In attempting to adjust claims brought to me in dispute, I started in with an attempt to use the Washington fee-bill, but I found it would not apply, and an attempt was made to meet the average fee-bills which were adopted by the different district medical societies of this state. The fee-bill adopted by the Aberdeen District Medical Society is the highest fee-bill I have found, and the complaints which have come in in regard to medical charges have been more frequent from the Aberdeen District than from all of the other societies of the state combined.

As to the question of fees: I would be pleased as an official to know the views of the doctors of this state as to what they think would be a just or ample fee-bill in workmen's compensation cases. In making such a fee-bill they should consider the facts and conditions under which the charge is made.

I am going to make this talk very short, but I want to take up a few matters that have come up to me as an official in administering the law. Some of the bills that came in were so large that the insurance companies and others interested came to me before the opening of the last session of the legislature to assist them in drafting a logical fee-bill for workmen's compensation cases in this state. I suggested that as we had another two years we should bring the matter before the physicians and see whether or not they are willing to base their charges on the workmen's compensation law and spirit. Nothing was presented at the last session of the legislature. As an example, not long ago a bill came to me in which one physician in this state charged $156.00 for an amputation at the root of the nail of the little finger. When the company was called upon to pay the bill, they protested that it was excessive in a large degree. I applied, as far as possible, the Washington fee-bill to the case. The physician had as one of his items $20.00 for going out into the country and seeing the injured man. I approved of a fee of $50.00. The doctor protested, and insisted that he would bring suit for the full amount because under the fee-bill he did not put in all charges he had made, and that his bill was very light, and that, if he was not paid the full amount, he would sue. My reply was that it did not make any difference what he did, he could not sue me, but he could sue the company, and they probably would be pleased to take the case before a jury to determine whether or not this was a proper fee.

Another case came on later in which there was a charge of $49.00 for amputation of the thumb, and the insurance company protested against the size of the bill. While I thought it was an ample fee, the physician refused to cut it down. I told the company that I did not think the fee was extremely excessive.

Another case happened in the Aberdeen circuit in which a bill of $50.00 was rendered for setting a broken forearm. This was the case of a thresher. A farmer for whom he was working took him into a doctor's office. The fracture was reduced, and on the way he suggested the man might go back to the farm, instead of remaining around a hotel. On the way out he began flexing the fingers and twisting his wrist which added to the seriousness of the fracture, and the next morning he was in the field pitching grain. The doctor in that case did not push his claim, and he was never paid. The same doctor charged another farmer $500.00 for setting a fracture of the leg. He paid the bill and had the canceled check to show for it.

It is such cases as those I have related which are bringing on a demand for a logical fee-bill in this state, and it is up to the doctors of the state to determine whether or not they will take legal action themselves in order to make their fee-bill fit the circumstances of each case.

So far as the Huron fee-bill is concerned, I hardly look upon that as fair because there may be injuries which are almost identically the same, and, if complications should later occur, the amount of service required of the physician would be far more in one case than in the other and his compensation should be based accordingly.

Another matter regarding which there is considerable dispute is the charges which physicians make for visits. Some of the doctors in this state send in their bills for three dollars for house visits and three dollars for office calls, and I have had a number of those cases come up to me. I have made it a rule to cut down office

visits to $1.50, which I think is ample, although I may be wrong, not knowing what is really a proper bill on account of not being a medical man.

As to the fee-bills of this state as compared with the fee-bills of other states, let us take the fee-bill of the state of Washington, which is the highest. For a hernia operation their charge is $75.00 with $10.00 for subsequent treatment, and that only where drainage is required. Their average is $50.00 with $10.00 for subsequent treatment. In this state the average charge for a hernia operation is $150.00. In Utah they go to the other extreme. There they allow only $25.00 for setting a broken hip or $25.00 for trepanning a case, which is ridiculous. They allow only $5.00 for setting any minor fracture. Their fee-bill is too low. The Washington fee-bill for doing ordinary fracture work is $10.00.

I would suggest that it is up to you to say for yourselves whether or not the insurance company and other interested parties shall go to the next legislative session and ask for a logical medical fee-bill if such charges are being presented in this state and are likely to be presented under the fee-bill which has been adopted by the different District Medical Societies.

In regard to the question of what would be an ample fee-bill in your program: It is up to you to thoroughly and freely discuss the matter, and, if you will do so, I would be very much pleased to have the viewpoint of some of you gentlemen as to what you consider would be an adequate fee-bill.

DISCUSSION

Dr F. E. Clough (Lead): There are some things I would like to speak of in connection with Mr. Travis' remarks. Complaints seem to be made by insurance companies about the unreasonableness of fees. I had the privilege of attending a meeting, in 1919, of all the industrial commissioners of the United States and Canada, held in Toronto. There was not a single industrial commissioner nor a representative of a single organization who did not come out flat-footed with the statement that a serious thing in the handling of the whole compensation problem in the United States and Canada is the attitude of the insurance companies, and in many of the states they are not allowed at all. In the State of Ohio they are absolutely ruled out of existence. They rule them out because they have such a bad influence on the doctor and the patient. They are constantly going after the doctors as to the amount of the fee they shall pay. They do not accept a fee that is reasonable. Once in a while they do, but very seldom.

It seems to me that the insurance companies are largely to blame because of the niggardly way in which these matters are adjusted. They are looking for the best of it. There is no question about that, and that is one defect in the law. As a whole, the present law is a great improvement over the old system because, in many accident cases in the past, we were never able to collect anything. The injured man is off work for a long time, and is not able to pay. Now we shall get something, but in many cases not what we ought to have.

Dr. F. A. Spafford (Flandreau): I do not understand that under the compensation law of this State you are restricted to $150 so far as the insurance companies are concerned. These workmen's compensation laws are all for the protection of the people. If you have a man who is injured and probably cannot pay and he is out of work, the workmen's compensation law comes in and gives him $15.00 a week. That is provided so that he can live during this time. It helps him out. If that man has any property, and so on, you can get $150 for the hospital and for your medical or surgical services from the insurance company, but that does not prevent you from getting more compensation from the man who is injured, provided he is able to pay. I would like to ask Mr. Travis if that is not the law?

Mr. Travis: That is true.

Dr. Cottom: Did you ever hear of a case where an injured man is able to pay the same amount as the insurance company pays?

Dr. Spafford: The essential principle in this law is to protect the people, so that these patients do not become objects of charity. The insurance companies pay $15 a week to the injured employee. If the employer does not protect himself by insuring his help he is up against it under the Federal Compensation law. If he has got anything, you can get more.

Mr. Travis mentioned fees that were absolutely unreasonable. No doctor who renders a bill of $150.00 for the little operation mentioned, is honest with himself, his patient, or the company. That is a pure case of grafting, and you cannot get away from it. You cannot lay down a scale of fees which will tell you what is the amount that should be paid and what should not be paid. Many of these cases give you more concern than others, and the case that gives you lots of worry is worth to you more than you can ever get paid for. You may have to see a patient two or three times, and then let him go. I do not think a fee-bill can be drawn up to meet all cases. There are some doctors who claim that because they render a minimum service, and the maximum fee allowed is $150, they ought to get all of that they can. That is not right.

There is something wrong about the law, and the law should be changed: and it is up to the doctors to have it changed. The maximum fee for hospital and medical service under the present law is $150. If you are running a private hospital and receive compensation for a case of fracture of the femur, and your treatment in that case is to put the man in a suspension apparatus for eight weeks, and the hospital fees are $30 per week, which is reasonable, who is going to stand for the $250 that is not paid? The working man cannot do it; the companies will not do it. You have got to span the gap. This State should have an unlimited amount of service. The Home Stake Company at Lead is taking care of its employees, not according to the law, but we are taking care of them irrespective of the law until such time as they are able to go to work. There is a crying need for this body to get behind a bill that will give us unlimited hospital and medical fees, so that we

can take on any service that comes up, and let us urge the doctors to be reasonable in their charges.

Dr. J. G. Chichester (Redfield): Every once in a while some insurance company will send around their fee-bills to the doctors and request them to accept them and do all the work in town for the company. We look over these fee-bills and find that, if the doctor will honestly do good work for the patients, he cannot make both ends meet and accept the prices allowed by the companies under these bills.

Mr. Travis, other politicians, and some of the people of this state who do not understand our side of the question, seem to think that the doctor is always trying to grab everything that he can. That is absolutely untrue. If they would only stop and think, they would realize that all of the honest doctors, and the great majority are honest, try to do their work faithfully and well, and should be paid a reasonable price for their work.

Mr. Travis has spoken of a number of fee-bills and has given us several examples of what he considers are overcharges. We admit that the examples he gives may seem excessive, but, in compiling the fee-bills, the committees have taken into account the expense of doing business and also living expenses in the district. Livery and office expenses and supplies, all cost money, and, if we do not get enough from our work to more than pay for these necessary charges, it would be best to refuse to do the work. Of course we all understand that no one can force a doctor to make a call if he does not wish to do so. When we employ some one to work for us we are expected to pay for that labor, and so far I have not found anyone who has given me any special rebates because I am practicing medicine, so why should I or any one else in the profession be making any special rates to the laborer?

If the legislature should pass a law that should specify all charges that we as a profession can make, and should make those charges too low we can and will refuse to do any work in cases that come under the compensation law. This course would cause, of course, a great deal of hardship to those affected by the law, but it would be the only way left for us to protect ourselves. From Mr. Travis' remarks he seems to have the same idea that so many of the laity have, that is, that the medical men should be imposed on in every way possible. They do not try to dictate to the merchant regarding the prices he shall charge for the goods he sells, but with us, we are told that, if we will not see their side only, they will pass laws that will force us to do what they wish us to do. I am not in favor of making excessive charges in any case, but I do think that we are entitled to a reasonable compensation for our work. We have all spent a great deal of time and a great deal of money fitting ourselves for our profession, and we are entitled to earn at least interest on this amount over and above expenses and labor. I believe in being fair to both sides in this matter.

Dr. T. F. Riggs (Pierre): I would like to ask Mr. Travis a question. Does the law allow $150 for the hospital care of a case and first aid?

Mr. Travis: The total amount for medical hospital service is $150 under the law as it now stands. I attempted to get that changed at the last session of the legislature, but could not.

Dr. Riggs: I have had three or four experiences in this connection. I have always found Mr. Travis square in handling these cases. Let us take one case, a case of fracture of the tibia in an employee in the City of Pierre. The patient was in a hospital and under a doctor's care for about four months before he was able to go back to work. He has an excellent result. I charged $56 for setting the fracture, which covered the *x*-ray charges. The hospital bill, I believe, amounted to some ninety-odd dollars. I did not get the difference between the hospital bill and the total amount. In fact, I got nothing. I did that work for nothing. Personally, I do not think it is the fault of Mr. Travis, but the point is that it makes a doctor disgusted. If you do the work and get nothing for it, and the man draws good wages, it is not right. It is unreasonable. I asked the man if he was not going to pay the bill, and he said the city ought to pay it. I approached the city commissioners and they said the insurance company would not pay the bill, and I have not received any money for treating that case.

Dr. F. S. Howe (Deadwood): Dr. Clough hit the nail on the head when he stated that a weak point in the law is in limiting us for hospital and surgical charges to $150. I have had the experience of treating cases for which I got nothing, as Dr. Riggs has said. The hospital bill took it all. The insurance companies have never yet said, "Here, we know that you are entitled to a fair fee, and we will not limit you in this case to $150," but they invariably make a total of $150 for the hospital and doctor's bill. How shall we divide this? I simply tell them what the hospital bill is for a case, "fracture of the femur," for example, and if I do not get paid I charge it up to charity. That is not fair. According to the intent of the law, these cases are not charity cases, and I think this attitude accounts to a large extent for the overcharges on the part of certain physicians. A physician is in a state of mind where he is going to charge all he can in small cases because he knows that invariably he will get stung on a major case. We may get up some kind of a fee-bill, but in many cases we do not get the fee we should have. The hospital bill on an average for a herniotomy, for instance, is never less than $65 or $75, and we take what is left.

I have always found Mr. Travis absolutely fair. I have never yet found but one patient who himself paid me anything above the compensation allowed by the insurance company.

Dr. H. J. Rock (Sioux Falls): I desire to ask a question. Is it not a fact that under the law the compensation commissioner is subject to permanent damages? Cannot a man bring suit against a commissioner to the extent of three thousand, or five thousand dollars for stipulating the amount of $150. If I should get hurt and be injured permanently, cannot the commission under the law be sued for damages in court?

Mr. Travis: The commissioner is not responsible for anything. The only thing is that the insurance companies pay compensation up to $3,000 for permanent disability.

Dr. Rock: My idea is this: The law is not for the protection of the doctors or the hospitals, but we should as physicians get a fair and reasonable compensation for the treatment and care rendered a patient. The law is to protect the public and the commission does its part under the law.

Mr. Travis: The duties of the commission are to see that the insurance company meets the obligation.

Dr. Spafford: Permanent damage to an individual is assessed at a set price. If a man is injured and should lose his little finger or thumb or lose all of his fingers, in addition to the $15 per week, he gets a certain allowance for permanent damage. Everything is specified, and you can collect that from the insurance company in case of death, that is, $3,000.

Dr. R. S. Westaby (Madison): I would like to ask whether this workmen's compensation act deals with the farmer in this respect. If a man who is injured on a farm goes to a hospital and is laid up for three or four months, who is responsible for his bill?

Mr. Travis: That law was framed by legislative farmers and when it was enacted it specifically provided that farm help did not come under the law unless the farmer and the help agreed to come under the law, and as they did not agree to come under the law the injured farm hand is the only one to look to for compensation, and he is the only one that is responsible. He cannot bring action against the farmer for damages.

Dr. O. R. Wright (Huron): This law has an amusing attitude to it. It plainly provides for the protection of the public up to $150. It puts the burden of responsibility for the injured person and the care of him on the physicians and hospitals. There is no injury of any extent for which the workman himself could not pay up to $25 or $50 if he is really a workman. Outside of that, if the injury is severe enough to make him a hospital patient and $150 is the average charge, that would take care of the man properly under hospital treatment. So the legistlature and the public decide that the doctor should do the charity work, and they should take the credit for the whole proposition, and you can see plainly the attitude of the commissioner on this proposition. He brings up a few isolated cases where doctors have made excessive charges. We have thieves in our profession the same as the politicians have thieves in their profession.

I recall a couple of cases Dr. Shirley had of fracture of the femur which extended over five months in which there was destruction of the knee-joint, and so forth; and yet did the commission take into consideration the responsibility which this doctor took in handling those cases? Do the commissioners realize that a doctor may be sued for damages if the result does not satisfy the patient? They refuse all responsibility over $150, and throw all charitable work on the man who takes the injured into his hospital and cannot kick him out. The members of the commission are put there on the basis of pay. They are there to protect the insurance companies, and not to protect the people of the state. That is really their object, whether it is supposed to be or not. We have got to get together on this proposition, and both sides should act in a reasonable way. When people are injured it is very essential that they receive competent medical aid for which they must pay.

Mr. Travis: So far as the Commission is concerned, it is bound by the provisions of the law. It cannot enforce a medical claim for a greater amount than $150. There has never been a case presented yet that the allowance made was up to the fixed limit except in a few instances, such as the ones I cited. The Commission is not responsible for anything except to enforce the law as far as it goes. I, as the executive officer of the Commission, attempted to get the allowance increased, but the legislature said no. I am not responsible for that situation. The legislature is responsible.

Referring to those cases treated by Dr. Shirley: He took care of them outside of any claim he might have against the county. I am responsible for the enforcement of the law and cannot go beyond $150. If I did the party interested could go into court and have it set aside.

Dr. Spafford: I understand this law is for the protection of suits against the employer. It is up to the employer of labor whether he takes out insurance or not for his employees. If he does not take out insurance and an employee gets injured he is responsible under the general law and liability act to enforce his claim. If he takes out insurance from an insurance company, his injured employee gets only $15 per week.

If you hire a man down in Huron to paint your house and that man gets hurt, it is up to you, the employer of labor, to insure your help. If you do not insure your help, and a man gets injured on his job, he can bring action against you. The law is to keep down the various suits that have been brought in the past that have been originated against employers of labor. Every one of you, if you have a chauffeur or an office girl, should have them insured; then if any laborer gets hurt he cannot bring suit against you for damages. If your chauffeur gets injured in driving your car he cannot get $15 a week. He cannot get anything out of you if he has not insurance. If you have not insured your chauffeur or office girl, or anything except the casual laborer, I think you are responsible. Under the present law you get a chance to get $150, whereas under the old law you got nothing. You are absolutely protected if you take out insurance, which costs $10 or $12 a year. Now, you get your part of the money, whereas before you did not get anything.

Dr. Harry T. Kenney (Watertown): Living as I have for a good many years in the same town as Mr. Travis, I know everything that has been for the good of the medical profession in the last six or eight sessions of the legislature has been done by him, who represents the Associated Press as well. He was always for us and has always been with us. As he stated to you, it is impossible for him to give more than the legislature has allowed or passed on. The doctors should get together and do something at the coming session of the legislature in order that you may get what is coming to you.

Mr. Travis (closing): I have very little to add to what I have already said. I make no plea for the insurance companies because I know they try to cut down bills to the lowest possible amount, and I know I have allowed bills they kicked on. The assertion that the companies always cut down bills is not true. There are cases since the workmen's compensation law where the insurance companies have paid as much as $1,200 in one case and $1,800 in another. As a rule, however, they hold bills down in ordinary cases to the legal requirement placed on them, and there is no attempt to go beyond. I cannot give more than $150 in any case. I would like to have the fee-bill enlarged in many cases, but I could not do it if I wanted to do so.

THE CANCER PROBLEM FROM A SURGICAL VIEWPOINT*

By E. P. Quain, M.D.
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The diagnosis and treatment of cancer in any part of the body is an entirely different undertaking to-day from what it was twenty or twenty-five years ago, when many of us were medical students. It will never be forgotten how pitiful and hopeless was the outlook for any patient upon whom the verdict "cancer" had been pronounced. With the possible exception of superficial epitheliomata it did not make much difference where the tumor was located. A diagnosis of cancer usually implied the patient's death warrant. There were two reasons for this: First, a positive diagnosis of cancer was seldom pronounced until the patient was in the terminal stages of the disease; in the second place, operative surgery was in its infancy, and the skill necessary for successful operations in early and operable cases was possessed by only a few. At the present time conditions are very different. It must now be accepted as a working hypothesis that every cancer originally is a distinctly local disease, and that the disease is curable provided the anatomy involved permits removal of all of the growth while it is local.

The curability of cancer is proven by thousands of cured cancer patients, and the number is ever growing higher. While it is true that cancer mortality continues to increase, it is also true that the percentage of cured cancer patients is increasing year by year, and the increase in cures in the past twenty years has been more than ten times as great as the increase in deaths. For this silver lining on the black and threatening cloud spreading around the zenith of our existence we owe a debt of gratitude to the development and perfection of modern surgery.

Yet, if we should be carried away in our surgical enthusiasm and consider the achievements of operative technic the only factor, or even the chief factor, in the improvements referred to, we would misjudge the situation entirely. The adoption of the practical principle that cancer is not a constitutional disease, but that it is at first a small local affair, and that it remains localized for an appreciable length of time after it first makes its appearance in the body, has been of greater importance to the patient than the most skillfully performed excision of the tumor. This led to the questions connected with the making of proper diagnosis while the disease was still localized and in the curable stage. Even a casual study of the post-operative results in cancer surgery will convince anyone that the great majority of cures following any type of cancer treatment took place in patients who were operated on *soon* after the appearance of the disease. It will also be found that almost 100 per cent cures followed in those cases where a supposedly benign lesion proved to be beginning cancer only at the post-operative microscopic examination of the specimen.

The problem, then, resolves itself into that of being able to extend proper treatment to each patient within the period of curability,—that is, between the time when the foundation is being laid for a developing malignant neoplasm and the time when the cancer is no longer local. That one single causative agent for the appearance of the first cancer cell is not yet discovered, is a doubly regrettable fact. When the cause of cancer is known, very likely some new and effective agency, destructive to this cause or its effect, will be scientifically produced. Secondly, the fact that no one universal cause for cancer has been found has become so firmly rooted in the minds of both lay and professional men and women that it is too often ignored that many causes of cancer are known. The result has been the adoption of a fatalistic doctrine and practice toward the disease on the part of very many in our profession. This sentiment is reflected in the apparent disregard of many signs and symptoms which are now well recognized as belonging to the beginning stages of cancer. The three cardinal signs of cancer, memorized from older textbooks,—tumor, metastasis, and cachexia,—are of slight interest in the diagnosis and treatment of malignancy to-day. They are the signs of a dying patient, and not of one in whom treatment is of any great consequence.

The conviction that cancer is curable should by no means be discouraged even though its specific cause, if there is one, has not been found. Malaria was cured by the use of quinine, and

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syphilis was cured by mercury a long time before the first plasmodium malariæ and the spirochete of syphilis were seen. The pathologic progress of lues in the various organs of the body was so thoroughly understood and described that when the specific cause was finally discovered practically nothing was rewritten and only a short chapter had to be added.

The present-day knowledge of cancer should be looked upon in the same manner we study the syphilology of Ricord, Neumann, or Morrow. We may or may not be here when the missing chapter is written. As things now stand, it will take all our spare time to become acquainted with the cancer facts already at our disposal. One of the greatest duties we, as medical men, owe to the public at the present time lies in the acquirement and use of these facts. If we fail to do this the cancer mortality will continue to go up. If we fail to do this and there be no new and revolutionary changes, by science or by chance, in the diagnosis and treatment of cancer, then there is an almost mathematical certainty that civilization will some day end with Moloch Cancer triumphantly writing the final line of the epitaph, for cancer is rapidly increasing in all civilized countries. It is rare among savage tribes.

Most cancers orignate on the basis of some other harmless lesion causing a long-continued local irritation. In chronic ulcers of skin or mucous membrane the distinctive change from normal cells into malignant ones takes place somewhere along the epithelial margin, but usually not until after many weeks and months of continued poisoning of the epithelial cells from the by-products of decomposition in the ulcer cavity. Long-continued mechanical bruising or chafing is apt to cause the body cells thus traumatized to lose the ability to control their growth, and a lawless cell-development begins. A mild low-grade and chronic bacterial infection in any part of the body may liberate irritating toxins, which in time induce malignancy. Chemical irritations chronically applied will have the same effect. It is well known that the cells of many benign tumors may undergo malignant changes, yet in my observation this has been a rare occurrence in comparison with the other causes mentioned.

Several writers have discussed seriously and scientifically the possibility that all living cells are endowed with intelligence. It is argued that the phenomena of cellular function, growth, and waste cannot be explained by any physical law or chemical reactions known to-day, but that many peculiarities of cell activities indicate that each cell represents a distinct being endowed with some degree of intelligence. This would explain many of the mysterious functions of living cells which we now do not understand and which we dismiss wisely, yet ignorantly, with the term "normal physiologic activity." Each cell, according to this theory, chooses "intelligently" the necessary chemical elements for its food. It does "purposely" its allotted piece of work. It "migrates" when its work is needed elsewhere, and steps aside for a younger and stronger cell when its task becomes too great or when its age of usefulness is over.

Although we might argue against the adoption of this hypothesis, we must admit that the action, for instance, of the leukocytes in leaving their resting places and hurrying to a focus of infection, has an almost uncanny application in this connection. According to such a theory, a normal cell would require, first of all, normal cell intelligence. If a cell should, for any reason, lose its intelligence you would expect its growth and its activities to become "crazy."

If a cell. or cells, be subjected to a chronic, irritating, exhaustive, or poisonous agent, they will lose after a time the ability to take up food properly, or "intelligently," and to do the work required by the rest of the body. If these cells happen to be of an unusually weak and sickly type their normal activities would be disturbed more readily. If at the same time cell-division were to assume an abnormal and rapid character, we might visualize the genesis of a new species of cells—cells gone crazy—even as a weak human intelligence may become exhausted—we see the beginning of cancer.

Putting speculation aside, a practical fact is, that cancer begins in one small spot and that the growth remains within a very limited area for some time before it gives to the patient any manifestations of its presence. When the patient first discovers the malignant tumor, or when tenderness and pain are definite symptoms, the new cells have already insinuated themselves into the normal tissues for a considerable distance. From time to time it happens that the patient is not aware from any sign or symptom that he harbors a tumor until metastases are already in evidence. Some individuals seem to have no resistance at all against cancer, and metastases appear very soon after the primary establish-

ment of a malignant growth. This is most apt to be in young individuals. After the first cancer cell, or cells, have once developed, there is a constant increase of these cells into the surrounding tissues. The cancer cells creep in between the normal tissue cells very much like a piece of putty wrapped up in gauze may be squeezed into the meshes of the gauze. Removal of the young cancer without removal of all the invaded tissues would be as impossible as to pick all particles of putty out of the meshes of the gauze.

The lymphatic vessels wind their way through the interspaces between the tissue cells. These vessels are exceedingly delicate and in many parts of the body form a network so fine that a pin-point will damage several of them. It is no wonder that, sooner or later, a cancer cell permeates the wall of a lymphatic vessel, and is carried away in the lymph-stream. It may lodge at any point along the vessel, or it may pass on until it reaches a lymph gland. In either case it continues to be a living cancer cell, as shown by its growing, multiplying, and establishing a new cancer at the place of lodgment. Sometimes malignant cells push themselves through the wall of a blood vessel, and are then carried along in the more powerful blood-stream to distant parts of the body where they again grow freely and uninfluenced by any therapeutic agency.

It should be remembered that, while the cancer is still confined to its primary location, it is always in more or less close contact with both capillaries and lymphatics. Any pressure or trauma of the affected part may squeeze a cancer cell free from its fastening and into the lymph- or blood-stream. It has been proven, both clinically and by animal experimentation, that the pressure produced by careless handling of the tumor in examination is enough to induce such an accident. This is a warning which none of us should forget whenever a tumor is examined. The practice of excising a small specimen from a malignant ulcer or tumor for microscopic examination is fraught with extreme danger of dissemination. It should not be done except with a complete understanding of the precautions necessary.

From the foregoing statements it should be clear that, if the area of tissue containing the original cancerous growth be excised before a single cell has escaped by blood- or lymph-stream, the patient will be cured from this malignancy. Surgical experience and time have now demonstrated that this is so.

This brings us face to face with the main issue of the whole cancer problem as it stands to-day, —the *early diagnosis* of cancer. It is not easy to give a definition of what is meant by early diagnosis. It does not always refer to the time the cancer is present before it is diagnosed. Metastasis takes place very soon after the beginning of primary growth in some cases, as, for instance, in young individuals or in a lactating breast, and a cancer with metastases cannot be called "early." On the other hand, a scirrhous epithelioma of ten years' duration may still be localized and curable. In many cancers the patients may not be conscious of any symptoms until late in the course of the disease, as in carcinoma of the colon. The best short definition of "early diagnosis" of cancer in my opinion, is "a diagnosis made early enough to permit complete and successful excision."

It is not my purpose to discuss diagnostic features of special types of cancer. Our literature is exhaustive on the subject. It is intended merely to hint at the general requirements for diagnosis. It cannot be stated too often that cancer rarely begins in normal and healthy tissues, and that a damaged tissue cell is its favorite birthplace. Cancer is so fond of deranged histologic structures that every chronic ulceration or infiltration must be considered potentially malignant. When all doctors shall have learned to assume that every lesion which *might possibly* be cancer, probably *is* a cancer, there will be a marked drop in cancer mortality. A more or less constant and chronic dyspepsia in a patient near middle age is a common early complaint from those who, two or three years later, die from cancer of the stomach. Any change in contour, function or sensation in the breast of a woman near menopause is due to a *probable* cancer. The same statement holds if the word uterus be substituted for breast. In both, the diagnostician is called on to find out whether it is *not* a cancer—not whether it *is* cancer. When a cancer is easy of diagnosis it is usually far advanced. The earlier the lesion, the more difficult the diagnosis. This frequently calls for special diagnostic facilities without which one is apt to grope falsely until so late that the diagnosis cannot influence the prognosis.

It may be stated that the radical removal by knife or cautery of the new growth or growths,

is the treatment which at this date offers the most for the cure of cancer. In certain types of malignancy *x*-ray and radium destroy cancer by necrotizing the protoplasm of the malignant cells. The best results have been obtained where scalpel, *x*-ray, and radium have been allowed to work in judicious coöperation. Concerning numerous other "cures" for cancer promulgated either by over-enthusiastic scientists or by rank charlatans we must conclude, and for all practical purpose assume, that there is no such cure.

"There is a tide in the affairs of men which taken at the flood leads on to fortune; omitted, all the voyage of their life is bound in shallows and in miseries." There is no situation in the practice of medicine imbued with more pathos than to see a dying patient whose recovery would have been almost certain had it been possible to institute proper treatment a few days, or hours, sooner. This feeling of sympathy and regret is intensified when we see a patient dying miserably from cancer whose clinical history shows the presence for months and years of a definite precancerous lesion, which might have been cured easily and simply with but slight inconvenience to doctor and patient. The blame is usually laid to the ignorance of the patient, who does not understand the genesis and the danger of cancer. We are apt to think, and often say, that it was all his own fault; he should have known better than to procrastinate. He should not have wasted his only chance for salvation by following the false doctrines of charlatans in the form of faith cures, mud baths, blood purifiers and various forms of spinal and pecuniary adjustments. He should have consulted his physican at the proper time.

Does early consultation with the family physician, then, always imply early recognition of cancer, and is the tentative diagnosis always followed by prompt action? This is a painful topic, and it was incorporated in this paper only after much hesitation, yet it is of such tremendous importance at this time that it would be a weakness to ignore it. Several years ago it was gently hinted, and, later, stated more and more plainly and openly by all surgeons who treat cancer, that many family physicians and general practitioners fail to advise their patients that they are suffering from precancerous conditions, and from cancer, until so late that curability is questionable or passed.

In order to convince myself as to the truthfulness of this assertion, a plan was adopted in our Clinic to ask each patient suffering from a well-established cancer the following questions:

Have you consulted any doctor about this trouble before?

When and how often did you see him?

What did he advise you?

The answers have been startling. It has filled us with a conviction that too many in the profession either do not possess up-to-date diagnostic cancer knowledge, or that they are too inconsiderate of their patients to bestow the necessary time and trouble required for proper examination. It is not desired to give exact numbers of incurables by whose statements we have come to this conclusion. It is enough to say that a very high percentage of our cancer patients had been under more or less frequent medical observation during the progress of the precancer lesion and during the later development of the cancer.

In 30 consecutive cases of inoperable carcinoma of the stomach we made the following observations: All patients but one had suffered definite symptoms of gastric disturbance for over one year. The one exception was the youngest patient, a woman of 33, whose symptoms had lasted only four months, and whose lesser omentum was nevertheless already studded with cancer nodules. Twelve of the 30 had had stomach symptoms for from four to thirty years. In 9 of the 30 the hopelessness of the situation was so evident that no effort at treatment was made. Incision, inspection, and palpation in 12 cases showed that no treatment would be of use for either cure or palliation. In the remaining 9 a palliative gastro-enterostomy was made in an effort to prolong the patients' lives in obstructive cancer of the pylorus. All 30 are now either dead or dying. It was found in all of them that cancer cells had already left their place of origin, and established themselves in surrounding organs and structures. The clinical histories of all of these long-continued gastric disturbances were singularly similar. After several years of more or less distressing pain after meals the condition had gradually and imperceptibly become more aggravated during the last year or so before the cancer was diagnosed. The long duration of the illness in many of them proved that cancer was not present for a long period of time after the stomach symptoms began. During this time there was a chronic ulcer in the gastric mucosa, and this was the exciting cause and the reason for the cancer.

Gastric ulcer is curable in the majority of patients, and every cured gastric ulcer should be considered the same as a prophylactically cured cancer. Most of these patients had repeatedly consulted physicians for their digestive ailments. Only a few had been advised that a possibility of cancer was present. Several were surprised on learning the diagnosis even hinted at, and in those the realization of the prognosis may be imagined. No wonder the question has often been heard, "Why did not my doctor tell me about the danger?"

Ten patients with incurable and hopeless carcinoma of the rectum had suffered from "bleeding piles" during a period of time ranging from seven months to four years before they were aware of the seriousness of their ailment. Six of the 10 had consulted their medical advisor repeatedly, and yet no examination had been made beyond an occasional inspection of the anus, which could not disclose a tumor two or three inches higher, but within easy reach of a palpating finger. Three of these patients were less than forty years old.

In 30 consecutive cases of cancer of the uterus we found that the average duration of symptoms pointing to malignancy was thirteen and three-fourth months. The symptoms were irregular or constant uterine bleeding about the time of or after menopause, unusual and offensive leucorrhea, and pelvic pain. As you would expect, when the disease had been present a year or more its progress had reached a point where medicine and surgery could offer nothing more than relief from pain. The ages of five, or one-sixth of the total number of patients, ranged from 27 to 36 years. Although these five came to our notice earlier than any of the others, namely, from three to ten months after the beginning of symptoms, yet all had such hopeless involvement of the surrounding pelvic organs and tissues that palliative treatment alone could be considered.

Unhealed lacerations, ulcerations, so-called erosions, and beginning cancer of the cervix are simple and curable diseases. With a vaginal speculum properly used in all cases of abnormal and unphysiologic vaginal discharges, a tentative diagnosis is within the reach of every medical man.

Out of 25 consecutive patients operated on for cancer of the breast, more than half the number had known that a tumor was present for six months or longer. Several had had this knowledge for two and a half to three years. Although 6 came for surgical treatment within six weeks after the discovery of the tumor, the average time before operation was nevertheless ten months. The earmarks of malignancy had been unmistakeable for several months in all the older patients. Axillary metastases were present in more than half the total number. It should be needless to state that in cancer of the breast permanent cure is almost assured when radical operation is performed within the first month after the beginning of the disease, and that after secondary growths are palpable in the axilla cure may be impossible.

When a patient applies to a physician for advice and follows it, nothing more can be expected from the patient. When a patient in the cancer age with a chronic ulceration is dismissed with a salve, a powder, or a douche, and the admonition to "wait until we see if it develops into anything," then the responsibility rests with the one who gives the advice.

The operative technic in curable cancer has reached a point from which we can expect but little, if any, farther advancement. The situation must be changed, if change there is to be, by a revision of knowledge and a more interested attitude on the part of the medical advisors who are in closer and more constant relationship to the every day life of the patient than is the surgeon.

We may safely predict that a steadily growing public intelligence along lines of pathology will some day demand a more general adoption of such knowledge and attitude. Stranger things have been recorded in the annals of medico-legal practice than allegation of medical responsibility for failure to recognize cancer. There are humanitarian agencies at work in this country trying to tell everybody the truth about cancer. The Society for the Control of Cancer has already begun a campaign for cancer education in most states. Almost nothing has as yet been done in our state, but it is soon coming. It will take the form of a propaganda conducted much like the campaign against tuberculosis. Schools, churches, theatres, and clubs will become enlisted in the work, and we of the medical profession will be expected to take our part as educators. When the public understands the real problems of cancer, the treatment for cancer will become simplified. It will meet early coöperation and become essentially prophylactic, directed chiefly toward the cure of precancer conditions.

DISCUSSION

Dr. M. MacGregor (Fargo, N. D.): In regard to the cancer problem: The profession as a whole is inclined to be as fatalistic as the laity when they make a diagnosis of cancer. They forget that curing a precancerous lesion or curing the tumor in its earliest stages is really curing cancer. They think only in terms of the late neglected cases that cannot be cured. If we expect to have the enthusiastic co-operation of our patients in treating these cases, we must be more enthusiastic ourselves. Very few of the laity know that there is a record of 80 per cent of cures from operations for cancer of the breast (early cases) and that all patients might be cured if they were operated on when the lesion first appears. We often have patients come to us months after they first notice the lesion, simply because they suspect cancer and are afraid to have a diagnosis made, which, to them, means a death sentence practically. We should impress on our patients that cancers are cured, and that they should not delay at all in consulting their physician if they expect to have a fair chance of recovery. And I think we should be as diligent in putting over the truth about the cancer problem as the fakir is in putting over his propaganda. We certainly should be alert, treat all precancerous conditions and cure them, and diagnose our cancer conditions early and give our patient a chance.

Dr. S. Marx White (Minneapolis): I wonder if one point presents itself as forcibly to others as it does to me. The early consideration of the proper surgical treatment in those cancers which are available for study by the ordinary methods of physical examination, i. e., inspection and palpation, does not seem to involve much difficulty, but there is a greater difficulty in the cancers that develop in the viscera. Here we need to bring to the attention of us all the fact that the only way they can be discovered at a time when curable, is by the extensive adoption of certain routine examinations. No case of gastro-intestinal disorder, as illustrated by Dr. Quain, should be allowed to go by without a careful routine examination which would pick up the earliest evidences of carcinoma. The same is true of the uterus; the appearance here of early symptoms should be the reason for a careful, thorough, painstaking examination which would probably include curettage and microscopical examination. The appearance of untoward symptoms in the urinary tract should be followed by studies which would lead to the recognition of the pathological condition in its early stages. The point which I think Dr. Quain's paper has brought clearly before us is the obligation that is laid on the physician for a thorough, painstaking, searching examination following the appearance of early symptoms in visceral disease. The neglected diagnosis is a source of deserved discredit to the physician first seeing the case and through him reflects upon us all.

Dr. A. S. Fleming (Minneapolis): I want to reinforce if possible some of the pointss Dr. Quain made in his paper.

It is not a very difficult thing for a physician now-a-days to have a laboratory report made on all tissue removed. No matter how absolutely benign it seems to be or how positive you may be you are removing nothing more than a small mole or wart, or what not, ask for a laboratory report. Within the past year, we have in a number of cases been able to pick up the most serious types of malignancy by observing this rule as a routine procedure. In one instance a woman with repeated hemorrhages from the nose had a small papillary-like piece of tissue removed from the anterior surface of the lower turbinate, after which the part was cauterized and the patient sent home. In a few days the report came in that it was a sarcoma. The patient was immediately recalled and the parts treated with radium. At this time, one year later, there is no evidence of either local or general return. In another instance a young man had about the same experience, a small piece of tissue was removed from the inside of his nose while overseas for the relief of epistaxis. When demobilized he entered the University as a student under the supervision of the government in the reconstruction service. His epistaxis returned and examination by a specialist who removed another small piece of tissue and sent it to the laboratory, showed it to be a carcinoma. His case was also treated by radium with apparent success up to date.

A small pigmented mole that was simply an annoyance was removed from the labium. This specimen went through the laboratory routine examination, but unfortunately the report was sent back that the tissue was benign. Two years later she returned with a small enlarged gland in the groin which proved to be a sarcoma. During the two years preceding, she had unfortunately a veritable shower of pigmented moles profusely distributed all over her body. This case went to rapid determination.

So we have only to look back over our experience to reemphasize the necessity of thorough examination. No matter how small the particle, or how innocent it may appear, it should be carefully examined by a trained pathologist. I also want to impress the necessity for a more optimistic attitude on the part of the profession toward this problem of malignancy. We are altogether too pessimistic and the laity only reflects the attitude of the profession. As soon as we can impress the laity with the fact that we are making some headway in the treatment of malignancy, the sooner will they seek our assistance. As it is now, frequently the patient comes in and says, Doctor, I have been afraid to come in and see you, I have suspected for some time I have a cancer and I do not want you to sign my death warrant.

Dr. W. G. Brown (Fargo): After listening to the remarks of the last speaker I would like to make the point that I believe no surgeon has any right to remove a piece of any tumor that he suspects to be malignant, unless he is prepared to make immediate examination and go forward with the radical surgical procedure. There is no better way of starting a cancerous process in the tissues than to open up new areas and use the same knife. Therefore, unless prepared to go ahead and do a radical operation at the time, I do not believe the surgeon is justified in taking any specimen from the growth.

Just one point as to the engrafting of carcinoma cells on ulcers, as of the stomach: Following the development of cancer in ulcerated conditions of the stomach, we find that these tumors will go on and grow for many years and show very little metastasis. Cancer on the mucous membrane of the stomach seems to act much as does cancer of the skin: it is slow to produce metastasis. The inflammatory tissue that nature has built up around the area of an ulcer seems to protect against the future growth of cancer cells.

ORAL SEPSIS AS A SOURCE OF SYSTEMIC DISEASE

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Radiographic examinations of teeth have been the main factor in calling the attention of physicians and surgeons and likewise dentists to the great importance which alveolar abcesses and chronic active infections play in disseminating systemic infections. Oral sepsis must be considered under three main heads: first, *pyorrhea,* which has insidiously developed and finally causes the patient to consult a dentist for proper treatment; second, *alveolar abscesses,* which belong to the domain of the dental röntgenologist for definite localization; and, third, *metastatic infection,* which has extended beyond the scope of the dentist, and a syndrome of symptoms has developed, directly traceable to imperfect fillings, improper bridge-work, and, in general, malocclusion and neglected dental hygiene, for which the patient consults a physician.

The dental profession has remarkably readjusted its mechanical technic to harmonize with the recent information reflected by Röntgen rays.

The majority of cases of pyorrhea develop in young adult life, alveolar abcesses in middle adult life, and metastatic infections in middle or past middle adult life; and it is interesting to note that very few men of fifty years of age or over who show advanced stages of dental sepsis, are normal physically.

Oral surgeons who have interested themselves in mouth infections state that 50 per cent or more of devitalized teeth show Röntgen shadows, and that 75 per cent or more of snags of teeth left by decay show shadows. It behooves everyone who has devitalized teeth to have an *x*-ray examination made at frequent intervals, say, every year or two, to determine whether or not periapical sepsis is developing. I think that all teeth in which the nerve has been devitalized are better out than in because, sonner or later, the pulp and the peridental membrane will become infected, and then they will cause trouble. It must be borne in mind that oral sepsis is a strong contributing factor in raising the blood-pressure and in involving the cardiovascular system, ultimately leading to the syndrome of symptoms of chronic interstitial nephritis and chronic myocarditis.

Oral sepsis should be approached and investigated with a discreet and sound clinical mind, for, otherwise, the looked for and anticipated results may fall by the wayside, as oral sepsis is not the cause of all ills, but frequently only adds to the ill effect of other diseases. We must not be carried away by over-indulgence in enthusiasm, and we must remember that infective conditions of the body, such as cholecystitis, pyonephrosis, and osteomyelitis, may be an influential factor in starting a periapical abscess in devitalized teeth.

Vital teeth should not be indiscriminately extracted, for they are a valuable appendage in the mastication and proper digestion of food and should be extracted only when they show an irreparably diseased condition of the roots. Pyorrhea can be, and should be, treated without opening the question of extraction.

CASE 1. Brakeman B., aged 36, was in a collision January 20, 1919. After he had received the usual treatment for bruises and sprains with more or less bed confinement, he was referred to me by Dr. L. H. Labbitt, of Enderlin, N. D., for the reason that he did not make the anticipated progress towards recovery.

March 20, 1919: He walked bent over, with a stiff and guarded gait. He complained that the lower part of his back always hurt him and that pain ran down on the outside of both thighs to the knees. He complained also of soreness in front, on the right side of the chest, just below the ribs. The patient thought this soreness in his chest started from the pain in his back. Both knees appeared stiff and sore to him, more so at night.

Patient stripped: Had pain over the fifth dorsal spine, extending, in lesser degree, to the eighth spine and then radiating along the right side of the chest; also had pain in the upper right gluteal muscles and in the right lumbar region.

Heart, normal. Blood-pressure: Systolic, 128; diastolic, 68; pulse-pressure, 60. Urinalysis: sp. gr., 1012 and normal.

Teeth: Patient had ten teeth in the lower jaw; one-half were loose on account of infection. He had ten teeth in the upper jaw; one-half were loose. He also had four stumps in the upper jaw.

March 20: Patient was sent to the dentist, Dr. Verner Nilsson for radiographic diagnosis of questionable teeth, who reported that all the patient's teeth were in such an infected condition that, in order to obtain a good result, all should be extracted, to which the patient consented.

March 21: Patient stated that he had slept all night for the first time in three weeks and that he felt much relieved.

This patient certainly was not a malingerer, or else he would not have consented to have all his teeth extracted. He made a progressive recovery and resumed his former occupation three weeks after the mouth-infection had been cleared up.

The system eliminated the infection as long as the patient was in active occupation, but as soon as his resistance was lowered by trauma and confinement the system became overburdened with increased intoxication. Trauma to joints, ligaments, and muscles lowers resistance and in this manner increases the susceptibility to infection, particularly if a certain strain of microörganisms have an affinity for the structures injured. Subdeltoid bursitis, traumatic lumbago, muscular rheumatism, etc., should be regarded as infective in character; and a thorough physical examination should be made, in order to locate the primary infecting focus.

I have cited this case to direct attention to the relationship which exists between primary oral sepsis and lowered resistance caused by trauma.

Case 2. Farmhand, M., of Phillips, Wis., was examined by me August 1, 1917. He was taken ill February, 1917, with what he called La Grippe, and since then he had not been able to work.

Complained of heart trouble, sour stomach, headache, and backache. He had been constipated since February, and his bowels did not move unless he took medicine, sometimes going without a movement for two or three days. He had band-like feeling across the abdomen; was easily tired; and sweat profusely on exertion.

Pulse: Standing, 108; sitting, 100. Cardiac arhythmia Temperature, 99.25°. Urinalaysis, negative; sp. gr., 1018 and alkaline. Heart beat laboriously. Neck, fairly prominent. Eyes, staring. Tonsils, enlarged and apapparently infected. Teeth revealed a small bridge, and two were devitalized.

The diagnosis was not made, as there was a question between exophthalmic goiter, traumatic neurasthenia, and chronic myocarditis.

He answered questions so annoyingly slow that it was hard for the examiner to have patience to make a complete examination. One would class him as being morose and very defective in mental acumen.

His diet was regulated, and he was given elixir iron and quinine with strychnine phosphate, together with Hinkle pills and small doses of calomel. He was advised to return in one month for further observation.

August 29: At this examination nothing new was disclosed, and the previous treatment was continued. He was advised to have his tonsils removed, at which suggestion he was overcome with emotion and tears coursed down his cheeks.

September 18: The patient presented himself to have his tonsils removed. Before doing that, however, it seemed advisable to have him examined by a neurologist.

I had Dr. Arthur S. Hamilton examine him from a neurological standpoint. Dr. Hamilton was also doubtful as to a clear diagnosis after a complete physical examination. He thought that the patient was mentally unbalanced, and that the symptoms suggested catalepsy. His blood-pressure was high for his age, and an infection of some character had to be taken into account in arriving at a definite conclusion. He advised radiographic examination of his teeth, which revealed two alveolar abscesses in the upper left jaw. One of these abscesses was detected on a snag which had been bridged over from a crowned tooth.

September 20: At the hospital, under ether, I removed two large imbedded tonsils which were found extensively diseased and harbored pus pockets. I removed one abscessed crowned tooth and one infected snag.

September 22: Patient left the hospital, and was told to report later that I might note whether or not his symptoms had been ameliorated.

October 8: His blood-pressure had decreased 20 mm. Urinalysis, negative; sp gr., 1012. His intelligence revealed marked improvement, and he answered and asked questions freely, while previously he was aggravatingly drowsy and showed inability to concentrate, which was likewise observed by the ones who had known his slow and torpid mental state before the removal of his abscessed tonsils and teeth.

On November 8, 1918, I received a letter from him from Camp Grant, stating that he was now a full-fledged private, and that he continued to make progress towards recovery, which showed that he must have recovered sufficiently to pass the rigid physical examination in order to enter military life.

Case 3.—On February 13, 1915, I was called to the house of a laborer, M., aged 62, who had vague rheumatic pains for the past two weeks over different parts of the body, but had not given the matter serious attention until red rashes developed about both ankles, extending toward the knees. When I saw him three-fourths of both legs were involved, and he had estimated how many days he would live before the condition would reach his heart, calculating from the progressive spreading from day to day on the lower extremities. Dr. Clarence A. Boreen examined the patient from a dermatological standpoint and pronounced the condition as hemorrhagic rheumatism. He advised extraction of his carious teeth and infected snags with the proper treatment of pyorrhea alveolaris. After the extraction of the patient's infected snags the rheumatism disappeared, and the purpuric rashes subsided without salyicylate medication.

Extravasations under the skin, commonly known as purpuric rashes, are now considered to be associated with some infection, such as rheumatism, etc.

The pathology of rheumatism has gradually unfolded a different meaning to the medical profession, and the term "rheumatism" will likely be as obsolete in thirty years from now as the term "scrofula" is today. When I began to study medicine, thirty years ago, the word "scrofula" had just as much relationship to tuberculosis as rheumatism has today to primary focal infection.

The extraction of teeth with abscessed roots nearly always leads to an exacerbation of lesions in distant parts of the body which were originally caused by the dissemination of micro-organisms or their products from their alveolar process. In less than twenty-four hours, active exacerbation may supervene in chronic infected appendix, gall-bladder-tract disease, genitourinary-tract disease, or inflammatory conditions of the joints. Such a prompt and fulminating reaction in the

secondary focus must be regarded as a rapid growth of organisms already there which are more or less latent, rather than as a recent dissemination. Conversely, chronic pathological conditions which appear rather urgently to indicate operative procedure occasionally clear up after such a simple process as the extraction of an infected snag, and this is even more gratifying in some organs which cannot be handled surgically, such as chronic interstitial nephritis and cardiac arhythmia.

In pyorrheal pockets the tissues come into contact with alien proteins due to the activity of bacteria, protozoa, etc., and the question of the interest is whether or not anaphylactic reaction is a factor of clinical importance in the causation of functional or organic disease. Protein sensitization or tolerance has not been conclusively worked out, either in the laboratory or clinically, which might shed some light on the fatalities occasionally encountered in the extraction of too many abscessed teeth at one sitting.

I have clinical memoranda of somewhat over four hundred cases where the condition of oral sepsis has had something to do with the symptoms for which the patients consulted me. Two of these terminated fatally, and I consider these the most important; consequently, I shall report them in extenso.

Case 4. On August 30, 1919, I saw a case in consultation with Dr. Godfrey Deziel which is illustrative of the reactions as above set forth:

Locomotive engineer, W., aged 53; weight 220 lbs. He had been ill three weeks with a heart lesion. He had three chills, the last and most severe last night. His temperature went up to 105°, and he complained of pain over both lumbar regions.

Blood-pressure: Systolic, 108; diastolic, 70; pulse-pressure, 38. There was marked mitral regurgitation, due to ulcerative endocarditis evidently with streptococcic infection. He had a number of filled teeth; several devitalized and some carious, with marked pyorrhea about all teeth. Urinalysis; sp. gr., 1022; slight amount of albumin. Microscopic examination of the urine did not disclose any casts or pus, but many urates.

Prognosis, unfavorable.

September 4: St. Barnabas Hospital. Radiographic examination showed one abscessed tooth and three infected stumps. Dentist, Dr. Henry B. Clark, extracted four teeth under novocaine. The patient died suddenly. eighteen hours later.

All cases with ulcerative endocarditis of streptococcic origin sooner or later succumb, but, while this patient died in eighteen hours following the extraction of his infected teeth, one naturally debates between an exacerbation of the already existing cardiac lesion and anaphylactic phenomena.

The last case that I desire to include in my discussion is one of dramatic interest, showing how one pathological condition leads up to the next graver one.

Case 5. Bakery driver, S., consulted me on April 12, 1919, for sick headache, which he had had for the past three days, and for general rheumatic pains over the body. He stated that recently he had been to a dentist for the filling of some of his teeth. Upon inquiry I learned that no radiographic examination had been made. On April 14, Dentist, Dr. Arthur E. Swanson, radiographed his teeth and found eight abscessed, which he immediately extracted under gas anesthesia. On April 19 the patient had a chill followed by pneumonia, from which he recovered by lysis with protracted and stormy convalescence. Marked albuminuria was present during pneumonia. Death occurred October 4, 1919, and it must be admitted that the primary cause was oral sepsis, which lead from one disease to another until the final sequelæ were reached: infected teeth; rheumatism; nephritis; pneumonia; myocarditis; uremia; convulsions; and death.

It has been my invariable rule to caution patients not to have any dental work done until a radiographic examination has been made of the roots for the purpose of determining definitely whether or not the teeth are diseased. No vital teeth require röntgenological examination, for it has been definitely proved that vital teeth are never absessed.

In conclusion I may add that any clean operation, such as for hernia or ununited fracture, should not be undertaken until the system is entirely freed from all infections. Furthermore, if a patient has two infected conditions, one of which can be handled in an ambulatory way and the other of which must be handled in the recumbent position, it is often best to await complete recovery from the former before operating on the latter,—in other words, activity shortens and confinement delays recovery.

INFLUENZA AND TUBERCULOSIS*

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During the past year a number of articles have appeared in our medical journals pertaining to the effect of influenza on pulmonary tuberculosis. In this particular field there appears to be no more agreement on the subject than has been evidenced in discussions on other phases of influenza. Owing to the tendency to chronicity in tuberculous processes, as well as incomplete vital statistics on the subject, it is perhaps too early to attempt to formulate definite conclusions as to what extent the late pandemic of influenza has modified the disease process in the tuberculous individual; however, a brief review of information available at the present time may prove to be of general interest, and may aid us in making more careful observations on the subject in our own work.

An endeavor will be made herein to treat the subject with a view of enlarging our general knowledge of the following points:

1. The effect of influenza on the individual with an active tuberculosis with regard to (a) the severity and duration of the attack of influenza, (b) the mortality-rate, and (c) the effect on the tuberculous lesion itself.

2. The question of immunity to influenza among tuberculous patients.

3. The effect of influenza on healed tuberculous lesions.

Let us consider, first, the effect of influenza upon the subject with an active pulmonary phthisis. It has been stated that, when an attack of influenza intervenes in a patient suffering with active pulmonary tuberculosis, the tuberculous process is likely to be aggravated and very often terminates fatally in a comparatively short time. It is generally admitted that in the actively tuberculous patient most intercurrent infections of an acute nature are liable to produce fatal results.

Inasmuch as pandemic influenza occurs only at great intervals, and then extends over comparatively short periods of time, the late epidemic afforded less opportunity for accurate study than do most of our acute infections; therefore, the knowledge that we obtain from our text-books on this theme is necessarily based on the earlier pandemic of 1889-1892. The observation of the clinicians of that period was, that phthisis of the lungs was noticeably and unfavorably influenced by influenza. A number of authors who have related their experience in the recent epidemic are in perfect accord with this view, but others are inclined to take exception to it.

Fishberg[1] says, "A large number of patients in this city (New York) contracted influenza, and not a single one succumbed. Some were in the far-advanced stage, with large cavities in the lungs, yet they passed through the acute symptoms of influenza and recovered, the tuberculous process then pursuing its course as if no complicating disease had affected it." This was observed at a time when a large proportion of the non-tuberculous patients under Dr. Fishberg's care succumbed to influenza.

Amelung's[2] observations and investigations lead him to conclude that the influenza morbidity among patients with pulmonary tuberculosis is slight, and that influenza takes a milder course in such patients than in the non-tuberculous, unless the tuberculous process is far advanced.

Dorn[3] states that from his experience the tuberculous are more resistant to influenza, because their long illness has probably given rise to more numerous antibody formations.

Among those who take exception to these views we find E. Keyser-Peterson,[4] who believes that the influence of the influenza depends on the extent of the tuberculosis. Incipient apical lesions and benign cirrhotic processes are usually not influenced; grave cases usually change for the worse. In one case of apical tuberculosis a miliary dissemination of tubercles took place coincident with an influenza pneumonia.

J. Burns Amberson, Jr., and Andrew Peters, Jr.,[5] in a rather extensive report and critical review of the subject, concluded that the severity of influenza is as great among the tuberculous as among the non-tuberculous; complications are equally frequent; and, according to statistics, the case fatality of influenza was higher among the tuberculous than among the general population. Of 1,227 former patients at Loomis Sanatorium,[5] 70 contracted influenza during the epidemic of 1918-1919, and 16 of these (22.9 per cent) are

*Presented at the annual meeting of the Soo Railway Surgical Association, at Minneapolis, December 17 and 18, 1920.

reported to have died, which is much higher than the general case fatality from influenza.

In a personal communication, Dr. F. M. Pottenger says he feels that influenza was not more severe in the tuberculous than in the non-tuberculous, and perhaps less severe in some cases. He also believes that the milder types of influenza did not seem to influence the tuberculous lesion to any great extent, but the more severe types proved detrimental. From similar communications we are informed that at North Reading State Sanatorium, Mass., out of a total number of 30 patients that developed influenza during December, 1918, 12 died, giving a mortality-rate of 40 per cent. All but 5 of these had the disease in a very severe form.

During the second epidemic at The Sanatorium of the Jewish Consumptives Relief Society, Edgewater, Colorado, from the middle of January to the middle of April, 1920, among 55 employees, 12 developed influenza. Half of these were tuberculous, and the disease ran a much more severe and prolonged course with them than with the previously healthy employees, who had recovered in from three to ten days. There were no deaths and no pneumonias in this group. Among 173 tuberculous patients there were 41 cases of influenza, of whom 11 died, giving a mortality of 26.8 per cent. These were all well-advanced cases.

Dr. H. V. Scarborough, of Oakdale, Iowa, informs me that at their state sanatorium out of 35 active, fairly well advanced cases who contracted influenza, there was a total of 11 deaths, or 34 per cent. There were no deaths among early or incipient cases.

Dr. Turnbull, medical director of the State Sanatorium for Tuberculosis at Cresson, Penn., where they see about 1,200 new cases yearly, and, during the war, chief of a 1,500-bed Government tuberculosis sanatorium, feels that there is no question but that a few seriously sick cases of tuberculosis, who were just holding their own, were tipped the wrong way by influenza as they would be by any other infection and were hastened to their death by it. In cases that were doing well he noticed very little change in the pulmonary condition.

As to the duration of an attack of influenza in the tuberculous individual, it probably is very much the same as in the non-tuberculous. Where we get reports of longer duration it can probably be ascribed as much to the effect of the tuberculous process itself as to that of influenza.

Vital statistics[6] for Massachusetts, New Jersey, and Michigan show a gradual decline in the number of deaths from pulmonary tuberculosis, which has been continuous from year to year up to 1917. The years 1917 and 1918 show a decided increase. Indiana shows a distinct increase during the months of November and December, 1918, over that of the same months for the preceding ten years. In New York state there were fewer cases reported and fewer deaths from pulmonary tuberculosis in 1919 and 1920 than during the years immediately preceding this period This might indicate that the pandemic probably carried off enough of the old cases to account for the decrease. No doubt there were many cases of tuberculosis whose death certificates were labeled influenza during the pandemic owing to lack of time to make a diagnosis by the overworked physician.

There seems to be an impression among many sanatorium workers that the tuberculous individual has a manifest immunity to influenza. In many instances it was noticed that the physicians and nurses, as well as the employees around tuberculosis hospitals, showed a higher rate of incidence to influenza than the patients under their care. Reports from other sources would indicate that influenza is as prone to attack the tuberculous as other individuals. Here we must take into consideration that most of our reports come from our well regulated sanatoria where patients are kept under careful observation, and regular habits enforced as regards recreation, diet, exercise, and rest. It was quite noticeable that, as a rule, influenza ran a milder course in individuals who received proper care from the very onset of the attack. Fatigue, no doubt, contributed to a fatal issue in a large number of cases of influenza in normal individuals. In most of our tuberculosis sanatoria a rather rigid quarantine or isolation was observed during the period of the epidemic, in addition to watchful care, which no doubt was another factor that favored the tuberculous patient. Unless we obtain definite statistics as to the incidence of influenza in tuberculous and non-tuberculous individuals among the general population, I do not believe that we can formulate definite conclusions as to whether or not the rate of incidence to influenza differs in the two classes. With an infection so acute and stormy at its onset as influenza, it is probable that, when placed under similar conditions, the difference would not be noticeable.

Of more vital interest, perhaps, is the problem

of influenza as a re-activator of healed pulmonary phthisis. It is now generally agreed among research workers in tuberculosis that in a civilized community there are extremely few adult infections of pulmonary tuberculosis. The individual has contracted the disease in childhood. This is shown by the large number of positive von Pirquet reactions in children. It is also agreed that a relatively small number of our population infected by the tubercle bacillus succumb to the initial or primary infection. The individual overcomes the infection and a quiescent or healed lesion results. How does influenza affect a quiescent or healed lesion?

In Osler's "Modern Medicine,"[7] we read: "Influenza is a frequent and important agent in bringing latent tuberculosis to light. Allowing for mistakes in diagnosis in which the presence of tuberculosis is overlooked, influenza must be classed as an important exciting cause, if not a true predisposition." This opinion seems to be quite general among authors whose conclusions are based on former epidemics. Among current writers who hold this view we find E. Keyser-Peterson,[4] who concludes that a latent hitherto undiscovered tuberculosis may become manifest after influenza. In his cases these lesions were centrally located, probably due to swelling of the mediastinal lymph-nodes, which continues for some time following the attack of influenza and furnishes a locus minoris resistentiæ for the implantation or spread of tuberculosis. This is in marked analogy to measles.

Berghoff,[8] in a careful and scientific study of 13 cases of healed and quiescent pulmonary tuberculosis, found that 6 cases, or nearly 50 per cent, showed a re-activation and a positive sputum after an attack of influenza.

Pottenger says that there is no question but that many quiescent tuberculous lesions are re-activated.

The records of the Ohio State Sanatorium[9] show that epidemic influenza had a decided etiologic relationship to tuberculosis; 40 per cent of 615 tuberculous patients admitted to the sanatorium since 1919, attributed their active tuberculous symptoms to influenza. Of this number, 67 per cent had a negative tuberculous history prior to the epidemic of October and December, 1918, as far as could be determined, while in 33 per cent classified as re-activated a definite or suspicious history of a previous tuberculosis could be elicited; 62 per cent of the entire group had positive tuberculous sputum.

Dr. L. C. Boisliniere[10] says, "A conservative estimate based upon personal experience and gleaned from the literature at home and abroad, and from conversation with many of the leading men of the country engaged in tuberculosis work, leads us to conclude that from 15 to 20 per cent of the new cases of active tuberculosis, presenting themselves since the onset of the epidemic in 1918 to the present time, were caused by influenza and that the incidence of active tuberculosis has increased to the same extent during that period and on that account."

If this be the prevailing condition we may look forward to a general increase in the number of tuberculous individuals. We should, therefore, be on our guard in order that we may not overlook cases of manifest tuberculosis, allowing irreparable damage to occur before the condition is recognized.

Here it may be well to remember that a large number of pulmonary sequelæ following influenza are not of tuberculous origin. Many lung infiltrations closely resembling a pulmonary tuberculosis may be caused by infections of a non-tuberculous nature. As physical signs and *x*-ray plates do not enable us to make a differential diagnosis in these cases, we are compelled to postpone our decision until the condition clears, unless an examination of the sputum makes a diagnosis for us.

A study of the blood-pressure may be of some value in these cases. Thus Tewksbury[11] observed 62 cases of non-tuberculous lung infections due to a bronchitis that clinically and physically resembled tuberculosis. These all showed a low systolic blood-pressure, averaging from 90 to 115 mm. of Hg. When improvement began their systolic pressure showed a rather rapid rise. This was not observed in a number of tuberculous cases under observation at the same time.

There may also be many instances where the tuberculous process is dated back to an attack of influenza in which a more careful history will reveal the existence of a definite tuberculous process prior to the influenza.

We also know that there is normally a certain number of apparently quiescent or healed lesions becoming re-activated from time to time. All of these factors must be considered in an analysis of the effect of influenza on quiescent and healed tuberculous lesions.

SUMMARY

1. Under similar conditions and surroundings

the severity of influenza is probably much the same in the tuberculous as in the non-tuberculous. Well-advanced cases of pulmonary tuberculosis undoubtedly suffered marked reverses as a result of the attack of influenza, while the more incipient cases did not show such a marked reaction.

2. If the tuberculous individual has any manifest immunity to influenza, it has not been clearly demonstrated. Training in sanitary precautions probably accounts for the non-development of influenza in epidemic ratio in many of our tuberculosis centers.

3. That influenza may serve as a re-activator of quiescent and healed tuberculous lesions cannot be denied. I imagine that those of us who are engaged in general practice have had occasion to demonstrate this since the late epidemic.

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DISCUSSION

Dr. John M. Dodson (Chicago, Ill.): I think Dr Hendrickson has done us a useful service in calling our attention to the fact of the uncertainty in regard to the relationship of influenza to tuberculosis. He emphasizes the fact that, notwithstanding the recent epidemic observed under the most favorable conditions, we have still much to learn. We are very much in ignorance in reference to influenza. To me it is a very great disappointment that this marvellous human experiment should have been so barren in its final result as to the causative factor of influenza. Never in the history of the world, so far as I know, has there been anything like such an experiment as was made possible during the influenza epidemic of 1918. Here were thousands of men, presumably all healthy men, gathered under conditions of the most perfect control, put into hospitals within a few minutes or an hour or two after the very first symptom or sign of trouble, in the care of the most experienced and the ablest clinicians, many of them, that we have, with laboratory workers of the highest degree of training, who in some cases were thoroughly familiar with the flora of the respiratory passages of these men because they had been already studying them; and hundreds of cases were studied exhaustively by these men under those conditions. And what was the result? At Camp Devens, where the first cases of influenza occurred, competent men were perfectly certain that the Pfeiffer bacillus was the cause of the disease. And that belief prevailed for some time. Dr. George Mather, one of the ablest pathologists we have produced in this region during this time, was in charge of the laboratory work at Camp Meade with the assistance of Dr. Ruth Tunicliffe, a very highly trained pathologist of long experience, who was there studying measles, the microörganism of which she has probably found. They had been studying those men for days and absolutely knew what was there, and with the development of influenza came the streptococcus hemolyticus flora, which arose with the epidemic and disappeared with it. All of their observations indicated clearly that that was the organism.

In November, 1919, I chanced to be in Camp Grant during my work in the service, and I found Dr. Edwin Hirsch in charge of the laboratories, an extremely competent, highly trained man. He showed me a whole wallful of charts and specimens. "This is a pneumococcus infection," said he, "no doubt about it." And to summarize it all the opinion of the most competent pathologists today is, that we do not know what causes influenza, notwithstanding these wonderful opportunities for observation.

I question very much whether influenza has any specific effect on tuberculosis. I recall very well that in the epidemic of 1889 and 1891 it was the opinion that influenza caused a rapid rise in the mortality-curve, not because it was a very serious disease in itself, but because it was the last straw which finished the old and the feeble, and those who had been suffering from other diseases. I think it was the same with the tuberculous. It would seem that it is clearly enough shown that influenza predisposes the respiratory organs to infection from tuberculosis. In the first place it is probable that most all cases of tuberculosis, appearing apparently first in adult life, are simply reactivated. As you are all aware, it is a generally admitted theory, at the present time, that we are all tuberculous. Ninety-five per cent of human individuals, when examined exhaustively post-mortem, are found to have tuberculous foci, probably dating from under the age of five. A very interesting new method of locating these foci has been devised and is now used by pathologists in various cities, which I think was originally proposed in St. Louis, and that is to *x*-ray the lungs after removal from the body. It is a very tedious process to section lungs so completely that we do not miss a focus. But by *x*-raying them we can find the shadows of small foci, and then it is a simple matter to cut down and prove their presence. Therefore when tuberculosis appears in an adult individual, it means reactivation of an old process. Of course, there are some exceptions to this rule.

An interesting observation in this connection is the history of the gassed men. The gases used in warfare, particularly phosgene, produced an intense inflammation of the mucous membrane of the respiratory tract. Many of the men who were badly gassed and who survived are still suffering. Now, it was anticipated that a good many of these men would later succumb to tuberculosis. They have not done so. As far

as I can learn very few of the men who were gassed have shown any signs of tuberculosis. There is, in other words, no evidence that a simple inflammation of the respiratory passages predisposes to tuberculous infection.

I would say, therefore, that what we do not know about influenza and about the relation of influenza to tuberculosis, would still fill a very large volume.

We know that the study of influenza is continuing under rather favorable conditions. Of course, there is an enormous mass of material. Something over a year ago the Metropolitan Life Insurance Company appropriated $60,000 for intensive study of influenza, the relation of colds to influenza, and the study of vaccines. Two centers of investigation were started, one in Massachusetts and the other in Chicago. They started out with the study of several hundred students who filled out an elaborate questionnaire giving their personal history and condition, with agreement to report, as soon as they had a cold, to the pathological laboratory in order that elaborate studies might be made. Several hundred of them, and also several hundred insane patients in the institution in Illinois, have been vaccinated. It is of interest to know that this study is continuing.

Dr Hendrickson (closing): I had hoped that in the discussion of this subject Dr. Dodson would be able to present something new, but, apparently, he has the same opinion in regard to this question that most men have—that we do not know very much about it.

The question of bronchial abscess and other complications following influenza is important. I think we realize more than ever before that there are other pulmonary complications of a chronic nature than tuberculosis. The influenza epidemic has taught us this, and especially the second wave, which showed a larger percentage of pleural involvements than the first. Also in regard to just how these processes work to bring about reactivation of a tuberculosis lesion, if such is the case, as I think has been rather conclusively proven, much remains to be learned. Many men have proposed explanations of this. I think a rather plausible one is, that an intense pulmonary hyperemia is produced in all cases of influenza, even where no pulmonary complications are evident. This favors a breakdown of protective barriers. However, the final result may be due to a combination of circumstances.

In regard to the analogy which exists between tuberculosis and measles: I think this question offers material for study. We know that the observation has been made that in measles in tuberculous individuals there is a temporary suppression or entire absence of allergy. This is also true in influenza. This state of disappearance of allergy is present in children, as well as in adult individuals. Inasmuch as this analogy exists, it would seem as if our bacteriologists might eventually be able to form some conclusions from comparing the effect of measles and influenza and the organisms in both. As Dr. Dodson suggests, we have had a great opportunity to study these things in connection with the influenza epidemic, and it seems strange that we did not arrive at a definite goal as to the solution of many of the problems that were presented.

In reviewing the literature on this subject it is rather interesting to note that the clinicians in the pandemic of 1889-92, although not having the facilities to work with that we have at the present time, especially so far as laboratory findings are concerned, came practically to the same conclusion that we have arrived at. Now, whether that is due to the fact that we are not as competent as they were, or that they possessed a larger clinical sense than the practitioners of today possess, is a question. Certainly they deserve much credit for what they have given us on this subject.

BOOK NOTICES

Practical Chemical Analysis of Blood. By Victor C. Meyers, M. A., Ph. D., Professor of Pathological Chemistry, N. Y. Post-Graduate Medical School and Hospital. 125 pages, 7x10, 13 illustrations, 30 tables. Price, $3.00. The C. V. Mosby Co., 1921, St. Louis, Mo.

Blood-chemistry studies have made rapid advances since 1912. Many of the results of Lude studies are now of definite practical value as aids in diagnosis and prognosis of disease. Methods of procedure that have been found of practical value by the author are described in sufficient detail that the laboratory worker should have no difficulty in performing the analyses.

Discussions on the interpretation of the findings in relation to diagnosis, prognosis, and treatment of various diseases on which blood chemistry gives any information are briefly but fully discussed.

The book should prove of value to the surgeon, as well as the internist and laboratory worker. The discussion of findings in prostatic obstruction should particularly appeal to the surgeon. It considers such cases relative to their ability to stand operations as judged by the blood-chemistry findings.

Diabetes mellitus and nephritis also receive some consideration in the light of operation risk.

In the appendix practical questions are taken up in connection with each separate disease in which blood chemistry gives any information. The author points out how and what to order of the laboratory in specific conditions, and explains what information one should expect in the various diseases.

Numerous tables, a list of standard solutions and reagents, and a complete bibliography are important features. The book can be highly recommended to everyone interested in diagnosis.

Floyd Grave, M. D.

The Medical Clinics of North America. (Issued Serially, one number every other month.) Volume 4, Number 5. By New York Internists. Octavo of 344 pages, with 58 illustrations. Per clinic year (July 1920 to May 1921). Paper, $12.00 net; Cloth $16.00 net. Philadelphia and London: W. B. Saunders Company.

This number of the Clinics is entirely given over to the contributions of clinicians from New York City. It consists of nineteen clinics from the better institutions of New York, and the majority of the contributors are numbered among the prominent and progressive younger clinicians of that center. The clinics are presented in the usual manner and contain a wide variety of material which is worth reading.

R. C. Webb, M. D.

THE
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The Official Journal of the
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WEATHER STRAINS

Perhaps as physicians we are apt to lay too much stress upon the climate, with its various seasons and its various changes in the barometer, and with its extreme heat or intense cold. Yet from a practical point of view it seems reasonable to believe that the weather has a great deal to do with the temper of the people; and certainly those who suffer from chronic and painful disorders and those who have been the subject of infections of various sorts, and particularly of the type that are more or less continuous, even though of low grade, are very apt to respond to the changes in the weather. Why not? Mechanical apparatus of various sorts used by meteorologists responds to the slightest deviation in wind, rain, or snow; and the static machine that still occupies a place in some doctors' offices is very responsive to changes in the barometer. Why, then, should the human machine be relieved of any sensitiveness toward atmospheric changes? A good many of our patients are apt to scoff at the doctor who tells them that their pains and aches, their irritability, their tired feeling, and the changeability of their symptoms are due to changes in the weather. But the fact remains, at least in the writer's mind, that the weather has a great deal to do with people, both in their painful and in their normal states. An eminent medical man illustrates this point. He is so responsive to weather conditions, that when the wind blows from the east he becomes at once an object of commiseration by his family. They skillfully avoid touching his sensitive areas. knowing that when the wind changes he will once more resume his genial and friendly attitude of mind.

When one considers the fact that for two or more years, perhaps for four years, and particularly since the onset of the epidemic of influenza that swept the world in October and November of 1918, and which carried with it and left behind a train of symptoms by its invasion of areas which it infected, starting with either the tonsils or the mucous membrane in the nasopharynx, the toxins being rapidly introduced into the blood-stream, from which it did its deadly work, one is inclined to believe in the theory of elemental control to a certain extent. Our patients are apt to think that sore tonsils and sore throat are simply localized conditions, not knowing that they become almost immediately systemic in character, hence the difficulty of treating these local areas and getting any response from alkaline preparations or even oily compounds. Most people find that they recover more promptly when they go to bed and rest and remain quiet for two or three days, eat but little, comparatively, drink a great deal of water, and sleep. The medicinal agents which are either corrective or helpful are very few. The clearing out of the gastro-intestinal tract and the administration of some simple tonic, like nux vomica or quinine, or whatever one habitually uses, is only a part of the method which prompts recovery.

A rather interesting article came out in the daily press not long ago, headed "The Earth on the Road to Health after Meteorological Mumps." This condition, the article says, was manifested by a world-wide heat wave of unusual length and intensity; and this heat wave, by the way, has not entirely subsided in various parts of the world, but, if anything, it has continued. The article says that the symptoms which accompanied the heat waves were earthquakes, tidal waves, cloud-bursts, typhoons, water-spouts, hail-storms, floods, and hurricanes, and these have been distributed over the entire world—one or the other of these symptoms. During the summer, for many weeks, the wave of heat of high intensity was accompanied by a deficiency of moisture, which has not occurred in fifty years, according to weather-bureau records. It has been recorded that there has been a shortage of 6.71 inches

rainfall, whereas in 1882, in September, the precipitation was 14.5 inches, and two years later, in 1884, there was only .15 inch.

With the heat of summer, which began very early and continued very late, and with the intermittent precipitation which was insufficient to moisten the earth, there has come a wave of some kind of infective bacillus, somewhat resembling the true influenza of 1918, or at least approximating the conditions which followed that. The attacks seem to come in paroxysms of violence lasting for a few days or even a few weeks. Then there is a subsidence which leaves the patient either recovered or subjected to frequent recurrences of what we ordinarily term colds.

These colds, however, are more general than is commonly supposed, and, like the influenza, are subject to frequent renewals. Further, like influenza, they are characterized by weakness, exhaustion, and persistent tire. Not uncommonly, too, they are the foundation of increased blood-pressure, because of the energetic movement through the circulatory system of the mucous membranes, and this membranous condition may extend from the mouth to the large intestine, the latter condition being characterized by diarrhea of sudden and unexpected violence, continuing for two or three days and as rapidly disappearing.

It is no idle jest to tell our patients, therefore, that they are suffering from disorders which are due to climatic and unseasonable weather conditions. Ask any old man who has suffered from rheumatism what he thinks of the last three years, and he will very promptly tell you that his rheumatism has been much worse than it had ever been before, and that his pains and aches have been the signals warning him of a change in the barometer and the approach of a stormy period. These conditions should not be dealt with in a light manner, because they may be simply the obscuring symptoms of something far more disorderly in the way of low grade or even high grade infections.

SPAIN FROM ANOTHER ANGLE

While looking for air castles in Spain you must remember that you get about the kind that you are thinking about, consequently they are figments of your imagination. And yet, in travelling through the country one occasionally sees a delightful old chateau or palace that is attractive and one almost wishes one could live there for a time in peace and quiet. There is also a good deal of discussion as to the expense of travel in foreign countries, and in Spain particularly. For instance, we were told that we could not get a satisfactory motor car in Spain, and, further, that the roads were very bad. Both statements were not corroborated by our experience. If you travel as you do in your own country you go on first-class trains, and, although their time of departure may be occasionally delayed, they arrive on time, as any other express or fast train is supposed to do. The expense of travel on the railroad is not excessive at all—in fact, it is one of the least of the expenses. But if you are travelling economically and trying to cover a good deal of ground, using the secondary trains, you will find that your progress is slow, that you cover a good deal of territory only by long and hard riding, and that your trains are not often on time, either starting or completing their journey. Someone has remarked that these trains in Spain start when they please, when everyone has had an opportunity to purchase a ticket, and arrive late at their destination because they stop at other places with the same degree of uncertainty and irregularity.

A good part of the time we travelled in an automobile and we had no trouble in securing a good car and a good chauffeur, and we found the roads over which we traveled, as a rule, in fine condition. This trip from San Sebastian, down on the border, to Madrid was 300 miles, and the roads most of the way were of the best. We also took two side trips, and found the roads good. On the trip in southern Spain the roads were good two-thirds of the way; the rest of the way they were either dusty or rough, but no worse than the roads over which we travel in various parts of Minnesota. We paid about twenty-six cents a kilometer, which is five-eighths of a mile. That included a car and a competent chauffeur, and for the mileage that we covered it was less expensive than it would have been to hire the same equipment in this country.

We stopped at the best hotels, had large, fine rooms, with bath and modern to a degree. Our food was good, the portions large, and as a consequence we frequently over-ate. The prices of our rooms were much less than we would pay in a good hotel in Minneapolis, Chicago, or New York. We should say that for what we paid eight or nine dollars a day the same floor space could not be obtained in New York or Chicago for less than fifteen to twenty dollars, these

rooms, of course, accommodating two persons. We concluded, after looking things over, that the prices were modest; that the food was especially good and well served; that the hotels compared favorably with hotels in any part of the world.

Shopping in Spain is very much like it is elsewhere. The shops are fascinating, and the prices are moderate. The streets are beautiful in their building designs. The temptation to buy is great, but when one remembers the end of the trip one must curtail expense.

The art treasures of Spain are marvelous. The Prado, the art gallery of Madrid, is probably one of the best in the world, and is not overshadowed even by the galleries of the Louvre in Paris or the galleries in Italy. Then, too, the Spaniard has a way of storing up his treasures that is unique, and naturally they cover a period of years —sometimes hundreds of years. He has great reverence for his artists. He honors them as we would honor a statesman who had accomplished wonders for the country. He gives them enormous space in his galleries, and private collectors secure many of the works of art from various parts of the country and treasure them as priceless. We found that each of the cathedrals of Spain, which are rather different from those of France, contained a treasury, or sacristy, where they kept their beautiful and costly jewels, monuments and gifts. For instance, in a great and wonderful cathedral at Toledo we saw numerous gold replicas of many old and marvelously wrought plaques; and in one corner stood the "Order of the Golden Fleece," a curiously beautiful bit of gold and precious stones, an order very seldom conferred. Then, in the sacristy, we saw paintings by the celebrated artists, and vestments that were worn by the priests and high church authorities on festal occasions and which were made from gold and silver thread wrought in marvelously beautiful patterns and preserved almost as if they had been made two or three days before.

The people of Spain, even in the smaller towns, looked prosperous and dressed well, many of them being as clean and neat in appearance as the people in any town or city that you know. When the editor ventured to remark that this was due to the teaching of hygiene and sanitary science, his legal friend flatly contradicted him by saying that the improvement was due wholly to the fashion journals. He argued this question to a legal conclusion. He may have been right, but the editor did not like to accept his theory as a whole, knowing the advance made in medical and social welfare work over a large section of the world.

Spain as a country is looked upon as the only surviving despotism in western Europe, and the general impression is that Spain made a great deal of money during the recent war. A further impression remains that there were many profiteers there, and that the people in general are not any better off than they used to be. There is, underneath, a spirit of revolution going on in this country, not necessarily against King Alphonso XIII, because he is popular with and loved by the people, but the people feel that he is entirely under the power of his military generals. There may be a good deal of truth in this, but someone must rule Spain, and if they should allow themselves to become revolutionists the entire country would suffer needlessly. And yet some sort of change must take place. The educational system in Spain is looked upon as extremely bad. The majority of the people are uneducated and illiterate, because they have no educational system which is controlled by experts in educational problems. They have created, however, a broad-minded committee which is now trying to emphasize the necessity and secure the necessary funds for conducting an educational campaign all over Spain. There is, too, an attempt to organize the socialistic and other revolutionary factions in Spain. In 1900 the Union General de Trabajadores had a membership of 26,000. It now has a membership of 211,900, and out of 21,000,000 population in Spain the membership has increased to a half million, and is co-operating with another and more out-lawed syndicate. The two combined will have a membership of 1,000,000.

They are evidently having the same labor troubles in Spain that other countries are having. The whole thing has resembled a huge epidemic in its economic aspect. Of course this feeling is intensified by the fact that the wealth of Spain, which the people thought was going to clear them from indebtedness and give them advantages, has been reduced down to a very pitiful sum, so that the post-war budget, which has been five years delayed, came out with a deficit of 560,000,000 pesetas (a peseta is 13½ cents). And yet, to go through the country one sees nothing of the unruly element. One reads of it, just as we read of disorder in our own land, but does not often see it. Barcelona seems to be the abiding place of the anarchists, and here, in

the vicinity of Barcelona, there reigns a group who are carrying on inquisitions in Spain that out-rival the inquisitions of early times. They seem to be an inflammable lot, and the slightest breath which contains a new idea in revolutionary circles starts them running in perhaps an opposite direction.

The war which Spain is carrying on with the Moors in Morocco is a very serious affair, and at one time it looked as if Spain would be utterly defeated; but it hardly seems probable that the Moors would reinhabit and regain their power of governmental control in southern Spain.

The time is coming when a new administration will be a necessity and the extension of education imperative. There are many hopeless poor in Spain, and it is no surprise that, being for the most part illiterate, they should advance the revolutionary spirit.

THE CAVEMAN

The term "caveman," which has been bandied about by the newspapers of late, applies very definitely to Spain as well as to some parts of France, for in many parts of the country they have discovered and are still discovering new caves. Some of them are astoundingly large, and then what is more important, are decorated with drawings, with colors, and with real objects of art on the walls and ceilings. It has been estimated by the archeological commission in Spain that these caves and these drawings may be 50,000 years old—a sum of years far beyond the belief of the biblical student. And yet a reproduction of the drawings shows there was an existent culture and art among the early inhabitants of Spain that was amazing. No wonder, then, that it has had so many artists of world-wide repute. Whether the caveman lived in his caves is immaterial. But that he lived and had a certain value as an educationalist or artist is beyond question. The fossils gleaned from these various caves have been properly catalogued and are on exhibition in the museums of the principal cities, showing that the races of thousands of years have been more or less similar in their make-up. At all events, the caveman still stands as a representative of something that is great and everlasting.

Of course, this is not the modern conception of the caveman. He is commonly supposed to have been a brute who wandered over the face of the earth and dragged women in by the hair of their heads to his cave, there to hold them as his slaves. Perhaps it was the only way to do, if the women would not come voluntarily. At all events it was a step toward civilization. If anyone wants a graphic description of the caveman of Spain, he should read "A Son of the Hidalgoes," by Leon. He is a Spanish author and has evidently studied the development of Spain intensively, for in his book he describes a dream in which his hero, or his principal character, when in his father's library consulting an authority, fell asleep and dreamed that Father Time came and carried him to the summit of the highest mountain in Spain. And under his eyes he saw the growth of Spain—its extent, its interior, and its borderline stretched out like a bull-hide drawn taut for the tanner. And, as he watched, he saw the apeman running through the jungles. He finally saw a higher grade of animal approaching the human, and he followed on successively the development of a race who eventually became the people of Spain, dividing themselves into tribes and living in various provinces, fighting with one another, as all good cavemen do, conquering one another, then erecting something that resembled a building. He goes on describing the village life, the community life, and finally the growth of towns and cities; the invasion of Spain by armies from without; the return of the invaded, and the furor of their counter-attacks, until eventually Spain became a country tremendous in its area and active in its pursuit of labor, farming, and the industries—in fact, Spain as it exists today. And then he woke up.

THE BULL FIGHT

I cannot pass over the national sport of Spain. In every city of any pretentions there is a bull ring, and in the largest cities it is a large building with elaborate entrances and exits and open to the sky. It commonly seats anywhere from six to eighteen or twenty thousand people, and in spite of the efforts of the better classes, the people still demand the bull fight. As in the larger cities in Spain the theaters open at 10:30 in the evening, so the bull ring opens ond continues until 1:30 in the morning. This is partly due to the fact that the people in Spain are late diners, even in the ordinary homes, and in all the better class houses and hotels the dinner hour is anywhere from 8:30 to 10:00 P. M., hence most people are a bit late for both theater and bull fight.

I felt that I must see one of these much advertised sports, and we went, one night in Madrid, to a high amphitheater. Although we were

right on time, the amphitheater was barren of people, but when the bull fight actually began it was crowded to capacity. The first one or two bulls that were admitted to the arena were fine looking animals and the matadors (one of whom was dressed in a swallow-tailed coat and a silk hat, and the other dressed to imitate Charlie Chaplin) were playfully teasing the bull. They did almost anything they chose. They slapped him in the face, they jumped on his back, they pulled his tail, and he seemed rather to enjoy the sport. They had no difficulty in evading him, although I fondly hoped in my heart that he would gore one or both of them—because he had no chance with his tormentors. Perhaps in the middle of the fight the gates are opened and some picadors came out on horses,—poor decrepit horses in the last stages of metamorphosis, thin-legged and scrawny, with ribs that stuck out like steel bands. These are the horses the bull is supposed to gore rather than the rider. But some influence prevailed that night, and no horse was disemboweled. They simply rode around the arena for a little time and then rode majestically out. But the bull fight went on, and these two funny people who were teasing the bull finally began to torture him. They threw darts into him. They exploded fire-crackers all over his body, until he really became enraged. And then the tall, silk-hatted, evening-coated gentleman attempted to thrust a sword into the bull's heart. He succeeded in pushing it into the animal for about eighteen inches, leaving it sticking out, while the bull rushed madly around the ring chasing his tormentors; but he failed to die from the sword operation. It was finally necessary to kill him, so they shot him! Another bull came out, tail and head up, but he failed to respond to the red flag. Instead of attacking it he ran away from it—a wise bull. He must have known the game. At all events he was teased and ridiculed for twenty minutes, but he absolutely and positively was too proud to fight, so they were obliged to let him go out into the corral.

The next bull to come out went through many various paces and suffered many torments. He was pricked with lances and stung with darts and had fire-crackers in constant eruption all over his body, and still he fought on, claiming his chance. But he, in the end, was struck in the head with a hammer, because he could not be killed by the unskillful swordsman.

They have four bull fights in one evening, and at the fourth we concluded that bull-fighting in Spain or anywhere else was the most unsportsmanlike sport that anyone could devise. But it is interesting to watch the crowd. There were people who brought their lunches, their wine flasks, and water bottles, and mothers who brought their babies, and they sat there for three or four hours, roaring their applause when the bull was finally killed.

The effort now in Spain is to minimize the cruelty of the bull fight, and all of the writers are urging the people to reform their national sport. Ibanez struck the nail on the head when he said the beast was not in the arena, he was in the audience. However, bull-fighting will still continue, just as cricket, football and baseball will go on, because they happen to be the national sport of the different nations. I think I can get along the rest of my life without ever seeing another bull fight.

MISCELLANY

ARCHIBALD CUNNINGHAM FAIRBAIRN

By Richard J. Hill, M. D.
MINNEAPOLIS

Archibald Cunningham Fairbairn was born in Brockville, Canada. After completing his studies in a literary school, he studied medicine in Queens College, Ontario, in 1871, and in the Royal College of Physicians & Surgeons, 1873. After graduation, he spent a year in postgraduate work in Paris and London. Speaking French fluently, he greatly enjoyed his work in Paris. Returning to the United States, he located in Sacketts Harbor, New York. After a few years of practice there he moved to Minneapolis where he remained until his death. After two years practice in Minneapolis, he returned to Sacketts Harbor to marry Fannie Sackett, daughter of the late General Sackett. She was a woman of unusual culture and refinement. She died a few years before the doctor's death.

Dr. Fairbairn soon became one of the leading practitioners of the city. He was a man of fine presence and large culture. He served two terms as County Coroner and organized that office on a business basis, and for the first time accurate records were kept in the office. He served on the first Board of Medical Examiners and for six years examined in surgery.

He served on the board of directors of the Minneapolis Athaneum from its merger with the Public Library up to his death.

He was noted for his kindness and sympathy with young doctors coming here to locate, and on holidays made it a practice to invite young bachelor doctors to dine with him at his home. Many of these men, now grown old, speak of the appreciation and enjoyment they felt at such kindness shown them. Some of them were entire strangers to the doctor.

He was a great student and possessed a fine library,

and kept abreast of the times by taking the leading medical journals. He joined the Hennepin County Medical Society soon after he came to Minneapolis, and was faithful in his attendance on the meetings of this, as well as the State Association. He was secretary of the County Society for two terms, and his minutes (now unhappily lost with all early records) were full and complete.

His ethical standard was high at a time when ethics were largely ignored. He was the type of an all-round practitioner before the separation into specialties. He was a daring and careful surgeon, performing one of the first laparotomies in this city. His skill as an obstetrician was recognized in the community, and he enjoyed a large practice in this specialty.

Several years ago while doing an intubation in a case of diphtheria Dr. Fairbairn had an infection from puncture of his thumb and was confined to his room for months, and very nearly lost his life. He never recovered entirely, suffering from partial optic atrophy and neuritis. His death was due to carcinoma of the esophagus and pancreas.

NEWS ITEMS

Dr. G. W. Frazier has moved from Hill City to Duluth.

Dr. Theo. Holtan has moved from Kilkenny to Waterville.

Dr. J. O. Lum has moved from Wing, N. D., to Harbor Beach, Mich.

Dr. J. A. Opstedal has moved from Chippewa Falls, Wis., to Murdock, N. D.

Dr. E. L. Armstrong is now doing eye, ear, nose, and throat work in the Earl Clinic of St. Paul.

The people of Waseca have raised $10,000 to furnish the new hospital now under construction in that city.

Dr. J. A. Thabes was chosen chief of the newly organized staff of St. Joseph's Hospital of Brainerd.

Dr. Wm. H. Von der Meyer, of St. Paul, was married last week to Miss Mildred M. Esswein, of the same city.

Dr. Herbert H. Thompson, of Minneapolis, and Miss Alice J. Lawrence, also of Minneapolis, were married on October 1.

Dr. Stella L. Wilkinson, of Duluth, has gone to Philadelphia to do postgraduate work in the University of Pennsylvania.

Dr. W. J. Kucera, of Hopkins, has gone to New York for several months' postgraduate work on the eye, ear, nose, and throat.

Drs. E. G. Sassé, W. Christianson, and C. T. Olson, of Lidgerwood, N. D., have organized and incorporated the Lidgerwood Clinic.

Dr. F. E. Harrington, Health Commissioner of Minneapolis, has been appointed chairman of the Public Health Committee of the League of Minnesota Municipalities.

The Shriners have selected a site on the river bank in Minneapolis for the Shrine Hospital for Crippled and Disabled Children. The Twin City Shriners acted in perfect harmony in their work of locating this hospital, which will be a great institution.

The September meeting of the Southwestern Medical Society of North Dakota was held at the country home of Dr. J. E. Schneider, of Bowman, N. D., and the members were the guests of Dr. and Mrs. Schneider at dinner.

Dr. Charles Alexander McKay of Emerado, N. D., died last month at the age of 44. Dr. McKay was a graduate of the Medical College of the University of Toronto, class of '05.

At a public clinic held by Marshall County (Minn.) Public Health Association at Gatzke in 1920 only 22 cases were examined; at a clinic held there last month 55 examinations were made.

Over 600 cases of infantile paralysis have been reported to the Minnesota State Board of Health in recent months, and over 50 deaths have occurred. The number of cases reported is rapidly decreasing, due to prompt reporting and proper medical care.

The first week in November has been designated as national cancer week campaign. It will be observed in most of the states under the auspices of the various public health associations of each state.

Dr. W. F. Cogswell, secretary of the Montana State Board of Health, has been appointed field agent of the United States Public Health Service. This work will not interfere with his duties on the State Board. His new appointment will enable him to co-operate more fully with the government forces at work on the Rocky Mountain spotted fever tick.

Drs. McWhorter, Wheelock, and Paddeford, members of the Huron (S. D.) Medical Society at Miller (S. D.) invited the society to a game hunt and a game dinner last week. The menu was limited to ducks and chickens shot by the members. The number of lame ducks that came back from the hunt cannot be obtained for publication.

Dr. D. V. Moore has moved from Yankton, S. D., to Sioux City, Iowa.

Dr. Frank L. Bradley died in his home at St. Louis Park on October 12. Dr. Bradley practiced in Minneapolis forty-one years. He was a graduate of Rush, class of '68.

Dr. H. M. Guilford, formerly Health Commissioner of Minneapolis, has become a member of the Wisconsin State Board of Health in charge of the Department of Communicable Disease.

The Soo Railway Surgical Association will hold its fourteenth annual meeting in Chicago at the Hotel Sherman next week (October 21 and 22). The program contains the names of twenty-two surgeons who will give addresses, several of which will be at the Cook County Hospital with surgical demonstrations.

Dr. Edward L. Hills, of Center, N. D., died last month at the age of 67. Dr. Hills had been practicing at Hazen and later at Center, taking up the work of physicians called into service during the world war.

Lake City has a splendid hospital, and it has been made by the loyalty of the Lake City people. Last month a benefit entertainment was given for the hospital and a creditable amount of money was raised. This kind of a people makes it possible to maintain a hospital in any village.

The management of the Government Hospital in St. Paul, which was formerly the Aberdeen Hotel, was recently attacked in the press in a well-nigh disgraceful manner. Now comes Surgeon General Cummings on a tour of investigation, and pronounces the management entirely satisfactory.

Dr. J. C. Nelson and wife, of St. Paul, celebrated their golden wedding last month. Dr. Nelson came to St. Paul from Denmark in 1878 and practiced there until his retirement a year ago. He was Danish vice-consul for twenty-seven years and coroner of Ramsey County for eight years.

OFFICE POSITION WANTED

A position as nurse in office with physician or surgeon of good standing, preferably a surgeon, by an undergraduate nurse, qualified in stenography, secretarial work, record-keeping, and ordinary laboratory work. Two years' experience with prominent surgeon in large clinic. Best of references furnished. Address 181, care of this office.

PRACTICE FOR SALE

Unopposed practice for sale in a county seat town of 655 in Southwestern Minnesota. Fine farming country; crops good. Nearest competition 12, 14, 18, and 24 miles. Catholic preferred. Price of property, $4,300; $1,200 cash. Address 177, care of this office.

LOCATION WANTED

A young physician with good surgical training desires a location with hospital facilities. Can locate immediately. Will pay a reasonable price for office equipment. Highest of references. Address 180, care of this office.

ONE NEW HEIDBRINK GAS MACHINE FOR SALE.

Will sell above machine for half price. It is new and includes a portable case for the machine. A. B. Eastby, 116 West Grant street, Minneapolis, Telephone, Atlantic 4898.

LOCATION OR LOCUM TENENCY WANTED.

Location in a prosperous community, or will act as locum tenens for the next six months. Address 182, care of this office.

FOR SALE VERY CHEAP.

An oak operating table; a walnut examination chair; and a Eureka nebulizer with motor are offered at a nominal price. They were used by a leading Minneapolis physician until his death a short time ago, and all are in good condition. Address 185, care of this office.

OFFICE POSITION WANTED.

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THE DOCTOR AND THE LAW*

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The subject naturally divides itself. The doctor finds acquaintance with the law in his service to the patient, his occasional visits to the courts as an expert witness, and in his activities as a public servant.

By request I eliminate from the discussion all matters relating to physical culture, fast-driving, national prohibition, and other public pastimes; also faith-healers, chiropractors, and all healers, feelers, and ticklers who serve that special class which, according to the immortal Barnum, finds its chief virtue in fecundity,—one born every minute.

Like the philosophers of old, we should find our first task in definition of terms.

The term "doctor" covers a wide range. Webster's unabridged, brings it within the following classes: A teacher, a learned man, a member of the medical profession, a wizard, a medicine man, a friar skate, a cook in camp or on shipboard, a loaded die, and in Australia, the land of Uncle Bim, it is the cool sea breeze which prevails in summer.

I leave it to you to determine with your own conscience the class to which you belong.

Medicine has been defined as the art or science of amusing the sick man with frivolous speculations about his disorder and tampering ingeniously till nature either kills or cures him, and we have the old maxim: "Everyone is a physican or a fool at forty."

Now it is agreed that most of us in this company have reached the age of forty, and that the most of you who are here tonight are physicans. The status of the speaker, therefore, may be readily ascertained by natural process of selection. We lawyers and doctors are, of course, the popular target of both wit and ridicule, but it was Pope who said: "A wise physican skilled our ills to heal is more than armies to the public weal." And Byron, the immortal singer said:

"Physicans mend or end us;
"But, tho in health we sneer,
"When sick we call them to attend us
"Without the least propensity to jeer."

And the law, as you well know, is in all juridictions, except North Dakota, a simple and exact science. It is merely a rule of conduct prescribed by the sovereign power.

Having thus with scientific precision disposed of terminology, let us, like the skilled surgeon, explore the interior of the subject.

I hope to bring you food for thought,—something which in not all chaff. May this indeed be a feast of reason and a flow of soul, and let us have laughter. Laughter is the most healthful exercise. It is one of the greatest helps to digestion with which I am acquainted, and the

*Presented, by invitation, at the banquet given at the annual meeting of the North Dakota State Medical Association at Fargo, May 26, 1921.

custom prevalent among our forefathers, and at this time of exciting it at table by jesters and buffoons, was founded on true medical principles.

The law governing the doctor and his patient is well settled.

It implies that the doctor shall exercise only such reasonable skill as is exercised by the average of his profession in good standing in similar localities. If he does this much, his legal duty is discharged.

A physican is not required to exercise the highest degree of skill possible, unless by special contract he has agreed to do so.

The doctor's engagement is not to cure the patient, that is, he does not insure that his treatment will be successful. The failure to effect a cure is not even evidence of want of care or skill. I am speaking now of the general practioner. Of course one who is an expert or holds himself out as an expert or specialist, is by the law held to a higher degree of care and skill in his particular line than the general practitioner. In other words, an eye, ear, nose, and throat specialist, for example, must exercise such reasonable skill as is exercised by the other similar specialists in good standing in similar localities, and the general practitioner must exercise the same reasonable care and skill as is exercised by other general practitioners in similar localities.

On the question of diagnosis, a physician who has given a patient the benefit of his best judgment is not liable at law even if his judgment is erroneous unless the error is so gross as to be inconsistent with reasonable and ordinary skill and care; and on the question of treatment, where there is a difference of opinion among practical and skillful surgeons as to the course to be pursued in certain cases, a surgeon may exercise his own judgment, employing the methods his experience has shown him to be best and a mere error in judgment will not make him liable in damages.

From the standpoint of the patient,—it is the duty of the patient to coöperate with the physican and to conform to his prescriptions and directions, and, if he fails to do so, he cannot hold the physican responsible.

There is no legal duty on the part of the physician to recommend an operation or the removal of the patient to a hospital for treatment unless the patient requests advice on that subject or unless, from the condition of the patient or his previous history, the distance to be transported and the other facts and circumstances, the physician knows or in the exercise of care should know, that such operation or hospital treatment is reasonably necessary.

It is immaterial that the removal of the patient to the hospital would be convenient or that consultation with experts would be advantageous. The patient calls the doctor to treat him where he lies. The doctor incurs no liability for failure to remove the patient to a hospital or to call experts or others in consulation unless the condition of the patient makes such course necessary and the failure to do so is likely to result in serious consequences.

There is no legal duty on the part of the doctor to treat any patient when requested to do so. He may refuse to take the case without assigning any reasons for doing so unless the case is one in which the doctor has been previously called or the patient has not been in fact discharged. In such cases it is the duty of the doctor to render such service as the immediate necessity of the patient requires. If the doctor decline to proceed further with the case, he should notify the patient of that decision, but should also continue his treatment for such a period as will give the patient reasonable time to secure other medical assistance.

If one appeals to a doctor for medical assistance as a new case, his condition would have to be extremely serious and other medical assistance not available to require the doctor to give the case even temporary attention.

The relationship between the doctor and the patient is mutual. The patient, as likewise the doctor, may decline to enter into the engagement in the first instance, and, if it be in course of completion, it is the undoubted right of the doctor, if the patient declines to follow his directions or if there is not a complete understanding that the doctor shall finish the case, to discharge the patient, taking only such steps as will safeguard the life and health of the patient during the time required to obtain other medical attention.

Now, the engagement between the doctor and his patient is a mutual one. The parties may make an agreement in writing or orally as to the terms of the engagement and the compensation to be received for the medical service. That is an express contract. On the other hand, the patient may call the doctor for treatment without an understanding between them as to the compen-

sation to be paid for such service. In such cases the doctor may recover a reasonable fee for the services under the implied contract of the patient that, in calling the doctor, he shall pay what is reasonable for such service.

We may assume that the parties disagree as to the value of the services. If suit is brought by the doctor it will be a question for the jury to determine what is a reasonable fee under the circumstances, taking into consideration the services rendered by the doctor, the seriousness of the case, and the responsibility assumed and the results achieved.

While doctors may agree upon a fee-bill, to be charged in such cases, this is not binding upon the patient.

It would be immaterial as evidence of the reasonableness of the charge made by the doctor, but in the absence of an agreement between doctor and patient as to the amount of the fee, the fact that the doctors in that community have agreed upon the sum to be charged for similar service, is persuasive but not controlling upon either party.

When the doctor is in the court to recover his fee, and can show to the satisfaction of the jury an actual agreement as to the amount of his fee, that fact will control; otherwise he may recover only what is a reasonable sum for the service rendered.

To summarize: The legal duty of the physician or surgeon is to exercise reasonable care.

The legal duty of the patient is to coöperate with the doctor and faithfully follow his prescriptions and directions.

These rules of law are simple and capable of common understanding, and yet why are doctors so frequently involved in malpractice suits? The causes are many.

First, the patient is often ignorant of his true condition and expects results which are impossible from any operation or treatment;

Secondly, he often consults different doctors or fails to follow the directions or prescriptions of any medical adviser; and

Thirdly, he harkens to family advice, and if his injury results from an accident he is frequently the certain prey of ambulance-chasers and unscrupulous lawyers. These matters arise as an incident of human nature, and the doctor cannot prevent them, but he is the preventable cause of many malpractice suits where he fails to coöperate with his brother doctor or gives aid and comfort to the grievances of another doctor's patients.

A lawyer who undertakes the prosecution of a malpractice suit against a doctor seeks at the very beginning the support of other doctors, knowing that without such support his cause is lost. If he can secure the help of a doctor in the same community he rubs his hands with glee. If he fails there, he appeals to other doctors in the nearest medical centers or imports a specialist from afar. Without medical testimony the plaintiff in a malpractice suit is like a fish out of water. The number of malpractice cases constantly increases.

Without any desire to censure your profession, it is my sincere belief that this deplorable condition is due in considerable degree to the encouragement given such litigants by the medical profession.

Now, this is my idea of the duty of a doctor under such circumstances. He may give an opinion of a hypothetical case without knowledge that it is the subject of possible litigation, but, sooner or later, he learns the truth. If he has this knowledge in the beginning he should refuse to give an opinion unless he has taken a careful written statement from the patient of the history of the case and he is furnished, or has himself obtained, a written statement from the other doctor as to his side of the case. In such circumstance the doctor who is asked to give an opinion acts in a judicial capacity, and it is most unjust for him to render judgment unless he has heard both sides of the case. This is, moreover, for his own protection. If he fails to adopt this practice, and is afterwards subpenaed, and his opinion as a witness with knowledge of all the facts differs from that given to the patient or lawyer in the beginning, it is a weak and unsatisfactory answer to say that the first opinion was based upon one side of the case. The doctor, under such circumstances, is discredited, embarrassed, and condemned. If he has taken the precaution of obtaining a written statement from each party in the beginning, his first opinion will invariably conform to his testimony on the stand; indeed, it is unlikely that he would be called at all.

If he has given an opinion without knowledge that the case is to go to the court, he should, upon being so advised, immediately request from the doctor a statement of the case, and, if this changes his original views, he should at once notify the patient or the lawyer of that fact and the reason for it. Thus fortified the doctor need

have no fear of subpena-servers; and does not such a course commend itself to your views of medical ethics? Indeed, is it not mere fairness between all parties? In the most friendly spirit I appeal to you to write this rule into action and to adhere to it henceforth in your daily life. You will cast your bread upon the waters, and it will be returned to you a hundredfold.

And in those cases where you find the doctor to be at fault, give him friendly counsel, advise him to settle his difficulty, and give friendly aid in such accomplishment.

"Blessed are the peacemakers for they shall see God."

Tell the patient that to seek the redress of grievances by going to law, is like a sheep running for shelter to a bramble bush; tell the doctor that to seek vindication at law is no easier journey, for nothing is certain at law but the expense; and say to both of them that to go to the law is for two persons to kindle a fire at their own cost, to warm others and singe themselves to cinders; and because they cannot agree as to what is truth and equity, they will both agree to unplume themselves that others may be decorated with their feathers.

The plaintiff and defendant in a lawsuit are like two men ducking their heads in a bucket and daring each other to remain longest under water.

The situation may arise where the malpractice case is called for trial. You will at once be implored to act as a witness for one side or the other. Before you reach court you can do one thing with advantage to your brother practitioners and with profit to yourself.—consult the other doctors who, you know, or suspect, are to be called on the case; inform each other of all known facts and agree, if you can, upon the medical principles involved and the proper practice; but, whether you consult or go it alone, remember this, charity is an attribute of greatness. No one knows, least of all yourself, the intimate facts and circumstances which prompted the defendant doctor to adopt the practice which is now publicly condemned, and bear in mind that this public condemnation not only reaches the doctor and his reputation, but likewise reaches you and the reputation of every member of your noble profession.

Give him the benefit of the doubt when you can do so; make it plain that your testimony is based upon typical cases and that many instances known only to the attending physician may have altered the situation and justified his course.

I have seen doctor after doctor, men of reputation and integrity, and of the most kindly disposition, unknowlingly injure a brother physician by this practice. They would testify upon typical cases, and the inference naturally drawn from their evidence would be that one or more symptoms should clearly identify a given case and result in a proper diagnosis. Yet, you know that in your practice, a wide variety of cases is presented in which the symptoms are obscure, the diagnosis extremely difficult, and the course to be followed dictated largely by the circumstances of the particular case and the sound judgment of the attending physician.

I hold no brief for the malpractitioner, but I know of many verdicts rendered against doctors, based upon medical testimony of other practitioners, which, when given, was neither designed nor intended to accomplish such result.

The expert medical witness based his testimony on typical cases and failed to give or, what is more important, failed to express due concern for the limitations of the general rule which the case in question might impose.

You arrive in court, your impressions may no doubt be like those of Skelton, who said:

"Whoever goes to law goes into a glass house where he understands little or nothing of what he is doing, where he sees a small matter blown up into fifty times its intrinsic contents, and through which, if he can perceive any other objects, he perceives them all discolored and distorted."

Law is often spoken of as uncertain, but the uncertainty is not so much in the law as in the evidence.

Your direct examination will afford you no concern except that you should guard against extreme statements. Your embarrassment will arise on cross-examination. You must there answer questions by "Yes" or "No."

When such questions, particularly hypothetical questions, are given you, remember that, if you cannot give a fair categorical answer, you may state your inability to do so without making some qualifications or reservations, and the Presiding Judge will, as a usual rule, if you are not attempting to evade the question, permit you to answer and to express the limitations which you desire to accompany your "Yes" or "No" answer.

Avoid so far as you can technical language. Use simple words, easily understood by the common run of humanity. High sounding scientific terms only confuse and detract from your testimony.

I have talked with many jurymen, and it is utterly astonishing the variety of opinions expressed by them as to the evidence of a single medical witness. Remember the truly great are always simple. Consider always the reason of the question, for nothing is law that is not reason. I once had the late John B. Murphy, of Chicago, as an expert witness. The chief element of the good impressions he made was not his undoubted reputation and standing, but his plain simple language and his obvious effort to avoid technical words and to bring forth the truth without respect to its effect on either side of the case.

To emphasize, I repeat, let simplicity be your pole star, and brevity your guide. This will gain for you respect as a medical witness and reputation as a man.

Before leaving the subject of the courts, I mention the matter of witness fees.

The law allows the prevailing party in a suit $2.00 a day for each witness and 10 cents per mile of distance actually traveled. If you expect anything more as a fee for your time and service in court, see that it is paid to you by the party who calls you. A witness, particularly a busy professional man, should have greater compensation. Please do not blame the courts for this deficiency. The law is made by the legislature. The courts can only follow the law as made by those whom you and I and all the rest of us select for that purpose.

How many of you have appealed to the legislature to correct this deficiency and many other errors in our present laws? Very few indeed, yet your duty as a public servant with respect to bad laws is in my opinion most important and obvious.

This is illustrated in the case of the repeal of the compulsory vaccination law. That law should be replaced on our statute books. This will never be done until your State Medical Association undertakes a campaign of education and leads public opinion along that course so essential to the health of the people.

The Federal laws and regulations to combat the spread of venereal disease is another wide field in which, individually and collectively, you can render a great and lasting public service. As to what you have failed to do in these directions I offer no criticism. Your record is clear, but public opinion is slow to crystalize and prone to error. To you who know the facts, is committed the responsibility of leadership. We, the public, whom you have served so faithfully and so well, sound to you a clear call to duty.

CLINICAL PSYCHOLOGY AND ITS APPLICATIONS*

By H. J. Humpstone, Ph. D.
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Psychology to-day is recognized as the science of behavior. The papers and magazines are full of references to the would-be applications of the new science. Publishing houses and individuals are advertising all sorts of tests which they promise to be easily administered and infallible in results. Courses in memory training and development of will power are put forth for the purpose of separating an interested public from its money. The word "psychology" is put here and there and everywhere until it looks as if the tired business man was right who told his boy in answer to the question. "What is psychology? "It is a hard word which you use when you can't think of anything else." The psycho-analysts are explaining every kind of malconformed behavior on the basis of sex-complexes, and the whole situation reminds one of the state of medicine a few

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years ago when we had such books as "The Household Doctor" in every home, and the proprietary medicines and famous varieties of pills were the principle stock of the drug stores. We are at the patent medicine stage of psychology.

Contrasted to all this is the application of psychological principles to the study of differences in individual behavior, the treatment of specific defects, and the development of specific abilities, from the standpoints of anatomy, physiology, and hygiene. The idea that in some way we can separate the "mental" from the "physical," has no place in clinical psychology.

A clinical psychologist must know the anatomy and physiology of the brain and spinal cord. He must know all he can of the endocrine glands and the appearance of glandular dystrophies. He must know the diseases of childhood and their possible effects on eyes, ears, nose, and throat, and on general development. He must be able to detect infantile paralysis and meningitis. He must know the possibility and effects of birth-trauma. He must know about syphilis, gonorrhea, and tuberculosis. He should be familiar with the ordinary forms of insanity. He must know school methods and conditions, and be in touch with social agencies and the correctional institutions of his locality. And then he must be a psychologist, as well, and know how to give tests and evaluate the results.

The first psychological clinic was established in March, 1896, at the University of Pennsylvania; and until 1907 it was the only one in existence. It grew out of a need which was vaguely felt, and toward the satisfaction of which several efforts had been made. Efforts which, in the light of subsequent experience, were directed toward the satisfaction of another need, namely, the classification of *groups* of children on the basis of intellectual level for purposes of *group* teaching. Clinical psychology is concerned with the examination, diagnosis, and treatment of *individuals*. It concerns itself with many kinds of defects, severe and mild, mental, social, moral, and physical. Mental defects range from feeble-mindedness to bad spelling; moral defects, from degeneracy to simple obstinacy; and physical defects, from infantile paralysis to lisping. Contrary to the general belief clinical psychology does not concern itself exclusively with feeble-minded, defective, or otherwise abnormal children. What defines clinical psychology is its method. This method is distinguished by its treatment of people as *individuals* rather than in *groups*. Some types of defectives are recognized, and some kinds of defects are so obvious that they are easily discovered by anyone who has a little information on the subject. The microcephalics, the mongolians, the cretins, and the acromegalics are easily recognized on sight. When it comes to the differential diagnosis of others, and especially to an analytic diagnosis, the matter is quite different.

I was called in consulation once by a physician who was puzzeld by a child and thought it might be defective mentally. While I was examining the boy, who, by the way, proved to be supernormal and was getting the best of his mother, a younger child came into the room. Neither of the parents nor the physican had ever noticed her condition; but I saw at a glance that she was defective, and she proved to be an imbecile. In both cases we were able to suggest treatment which saved worry and money to the parents.

The most obvious application of our work is the detection of hopelessly feeble-minded children and their segregation. For most of these cases institutional care, sure and permanent, is the only sensible recommendation. The difficulties in the way of carrying out the recommendation are the unwillingness of parents to part with the children and the lack of institutional facilities to take care of them. Both of these difficulties should be overcome by the State; first, making adequate provision of institutions, and then providing by statute for the committment of the feeble-minded to them. The enormous expense entailed by having these children in the schools and their care in later life, for they must be taken care of somehow, to say nothing of their depredations when at large, warrants the measures I have suggested.

Physicians as individuals and medical societies can help in bringing about such measures because of their standing and the strength of their organizations, as well as because of their intimate relations with their patients and their families.

The second application seems to me to be the discovery and treatment of remedial defects. These, too often, are overlooked by the parents until it is too late to help very much, and, in many cases, they are made worse by ignorant treatment. I will illustrate by some types of cases.

First come those with remedial physical defects.

In the summer of 1918 I discovered a son of one of the University professors who was in a class in the demonstration school. He could not

read, and was a source of great anxiety to his parents. He was the third child in the family, following two rather brilliant children, and the parents thought he must be congenitally defective. A few minutes examination convinced me that he was visually defective. I recommended an oculist. He gave the boy glasses, and the boy has since skipped a grade in school to the delight of his parents and the surprise of his teachers.

In young children the diagnosis often turns on the question, "Can he hear?" Many children do not get on in school because they cannot see or hear. Is the defect organic or functional, or is it psychic? These questions must be answered, and appropriate treatment given.

The psychologist who does not understand the importance of the ductless glands is not ready for the general clinic work. A very interesting case came to me. I examined a little girl of about nine years of age. She was the middle child of the family of eleven. Her mother was surprised when I told her I thought the child was bright. She said she was so much slower than the rest that she must be feeble-minded. I made a careful physical examination, and discovered some evidence of glandular dystrophy. I sent her to a specialist in diseases of that sort, and the child improved at once under treatment.

Tonsils, adenoids, teeth, genitals, stigmata of degeneracy, anything almost in the way of physical defect, may play a part in the diagnosis and recommendation for treatment. I had a boy sent to me by a school principal, who said he was feeble-minded and should be sent to an institution. I tried a few simple mechanical tests, which he did very well. I noticed that he was fidgeting around a good deal, and I took off his clothes to see what might be the trouble. A bad phimosis and evidence of bladder trouble showed up at once. I examined his eyes and found defective vision. A pair of glasses, an operation, and treatment for bladder trouble resulted in a grade being skipped in school the next year.

In all these cases it is necessary to have the coöperation of a dispensary or of competent physicians as well as that of the parents or some social agency to see that the proper examinations and treatment are carried out.

Secondly, those whose trouble is some complex mental state not accompanied by obvious external physical defect. The psychologist must distinguish between amentia caused by congenital defect and dementia brought on by developmental conditions or obscure functional disorders. I have several times had cases show a petit mal during examination, but the best illustration was a girl of eighteen who was brought by the social workers of a large industrial plant. The patient seemed very nervous, but did the mechanical tests very well. I expected she would, for she was supposed to be a good typist, and I gave such tests to her to establish confidence. She did not respond readily to educational tests, and I inquired into her work. She was an invoice clerk, and rated as satisfactory by her chief, yet she could not do the simplest invoice for me, and after a few minutes she was so mentally confused that I had her taken care of by a social worker. To make the story short, she was suffering from epilepsy, and was referred to a specialist for treatment. Another kind of case which comes under this heading is illustrated by a brilliant student who had a sex-complex and developed into a pathological liar. Another case of a fine girl who was a teacher illustrates the substitution of one instinctive reaction for another. She also had a sex-complex, and the substitution was stealing. Careful examination and skillful treatment effected a cure and saved her family from the disgrace which would have come without the aid of the psychologist.

Thirdly, cases where the mental processes are peculiar because of defective imagery. The ordinary tests for vision, audition, etc., do not give much aid here. A child who has defective auditory images gets very little help from the drill in phonics and other work in language in the lower grades. Sometimes this difficulty is intensified by a speech defect. This is almost a separate branch of clinical psychology. I have had several cases of inability to get language, which seemed to be due to inability to articulate. This is a defect in voco-motor imagery, and can often be removed by careful training. I had a case where both visual and auditory imagery were defective. The boy could not learn to read or spell in school. I found out what the trouble was, and had him taught an hour a day for four days a week. In about ten weeks he learned to read by making use of his motor images.

Fourthly, cases involving so-called moral defects. These are in some respects the hardest of all. The forces of emotion, motivation, and judgment, and the influences of environment must be known and applied to each case especially. There is no such thing as a "moral sense." I cannot consider "moral imbecile" as a specific classifica-

tion. Lying, stealing, and sex offences are all manifestions of instincts. They are inhibited or modified by training. Unless there is a clear case of pathological substitution, the cause of juvenile dereliction is usually found in defective training or lack of opportunity for self-expression in conventional directions. But there are a few individuals who seem to have defects of such nature and extent that they are incorrigible. The only thing to do with them is to put them where they can do no harm. I have had good results in some cases by change in environment brought about by the coöperation of some social agency.

Fifthly, what we have come to recognize as a real class, the congenital illiterates. These should have been included under defective imagery, because intellect is an imagination complex and literacy is necessary for school work as it is now planned and carried on. There are numbers of children in our schools who are unable to profit by the course of instruction as provided. They are lacking in intellect. If they could be taught, by methods well known and used in special schools, to use their hands, they would develop the abilities they have and make useful citizens. I examined a boy last spring who was fourteen years old. He was in a special class for backward children for three years, and could neither read nor write. The teachers for six years had been trying to teach him as a little child to do the thing he could not do. He was a congenital illiterate, unable, because of some brain defect probably in the angular gyrus, to learn reading and writing. He had good auditory images and good motor control. I wanted him as a show case in the summer school, but he could not afford to come. He had a job at $14.00 per week doing some manual labor in a store.

The next application is in separating out the different abilities and giving educational or vocational guidance. This cannot be done by group tests, nor by reference to tables of norms based on median scores. It must be done by careful examination of the individual and by comparison of the specific abilities required in different trades and occupations. Frequently, in fact in most cases, the advice is negative in character, and this is because we do not yet have the necessary data on which to make more detailed conclusions. But we can usually give helpful advice to parents about the direction of their children's education, and could give more helpful advice if our schools were equipped to give differential education, instead of trying to force all children through the same treadmill.

Clinical psychology thus tries to coöperate with the home, the school, the nurse, the social worker, and the physician to secure the best treatment of individuals for their own good and for the good of society.

The methods used in examining a case will depend on the case itself, the skill of the examiner, and the purpose for which the examination is sought. In general, it will consist of making such measurements and giving such tests as will elicit all the information possible to determine the congenital and acquired competencies of the individual.

Some cases can be diagnosed on sight; in fact, I have more than once in my office heard the cry of a child in the anteroom and said "I have an idiot to-day" or "There is a Mongolian waiting for me." Some cases cannot be diagnosed in one examination nor until a careful study has been made, including an attempt to teach, often lasting several weeks. We try to get from the parent, if possible, a history of heredity, prenatal conditions, post-natal diseases, appearance of instinctive reaction, social reactions, school progress—any facts that will give a picture of the child's equipment and environment. We use standardized tests so far as we can have them, and puzzles, pictures, problems, and questions to elicit performance from which we can estimate the child's energy, attention, imagination, memory, intelligence, and intellect. Comparing his performances with norms established by experiments on large numbers of normal children or with the background of experience with similar performances previously witnessed, we place the child in some position on scales of social proficiency, intelligence, and intellect. A general diagnosis gives us such classification as normal, dull, bright, moron, imbecile, idio-imbecile, or idiot. Analytic diagnosis gives us a clue to the special abilities or disabilities where the attack must be made in the treatment. The psychological clinic offers no treatment of physical defects except such as can be corrected by simple exercise and it gives no drugs or medical or surgical treatment. Where such treatment is indicated in the examination the case is referred to a dispensary, to the family physician, or to a specialist for further examination and treatment. Usually our diagnosis is deferred pending the results of such treatment. Some clinics, especially those connected with school systems and court, have a

medical clinic in coöperation. Sometimes the psychological clinic is a department of a general clinic, which may include eye and ear, nose and throat, orthopedic, dental and general medical clinics. Often physicians refer cases to us for examination and report. They would do well to do so more often if the experience of many parents I have interviewed is any criterion. I have examined many a Mongolian imbecile, incurable and untrainable, with whom his fond parents had struggled for years because the "doctor said he will come all right when he is seven," and when he did not another hope was held out that it "would be all right at twelve." These cases never "come all right." They are due to arrested development in utero, and our feeble-minded institutions are full of them.

The fields of the psychologist and of the physician overlap. Each can supplement the work of the other. I have tried to outline in this paper what our field is and how the coöperation may be possible when we have enough properly trained clinical psychologists to meet the growing demand.

DISCUSSION

Dr. Arthur Sweeney (St. Paul): The paper is very suggestive, as it deals with conditions that confront us every day and are seldom recognized. The first part of the paper is directed to the relation between the psychological and physical examination. We cannot examine a person psychologically until we are sure the physical condition is good. Many false diagnoses are made on the test that is offered. The same is true where the person cannot comprehend the instructions that are given. In performing the test he cannot, of course, give an adequate response, and we are apt to fail in our judgments.

Also in the cases of young children I wish to emphasize the necessity of recognizing the influence that physical conditions have upon the mentality. We speak of "retards" in the school. For instance, a child is 7 years of age, but shows the mentality of 5; is he a retard? No. In other words, we always make an allowance of at least two years for the influence of the physical condition on the child. When the retardation extends over three years, then we consider that we have a pathologic condition to deal with. In dealing with young children we must remember that the brain has probably not reached its full capacity of growth and that we must allow time for the 5-year-old child in the course of a few years to develop up to his maximum. He possibly may be 7, 9, or 11 years' mental age. Therefore, we cannot speak too dogmatically about the mentality of children in school. We must remember that at birth the child has a certain endowment of intelligence, of capacity to adapt himself to his environment, and that we have to allow time for him to reach that maximum. We must in the meantime remember the effect of the endocrine glands, of the tonsils, adenoids, and various physical defects in retarding the growing child in the development of his maximum intellect. The problem, however, is one that concerns us all. I am not wholly in agreement with the Doctor from a practical standpoint as to the effect of education, environment, and development, on mentality. I think it is the general rule that a man receives at birth the endowment of the mental capacity which he is going to reach during his life. In analyzing school conditions we have found that certain types of children in Class D can go to school and reach the second grade. The C class can reach the eighth grade and may enter high school, but cannot get through. After those representing the maximum mental age of 9, 11, 13 and 14 years, reach this maximum, they cannot learn any more, therefore, in those cases the effect of education is negative. You can educate brains if you have them, but if they are lacking you cannot produce them by education. I believe that every child should be freed from physical handicaps which retard development.

In regard to the moral imbecile type, I do not believe there is any such thing as the moral imbecile because there is no such thing as arbitrary morals. The question of morals has relation only to custom. The customs and morals of China and Central Africa and of the United States differ, not because of any definite condition of brain or intelligence, but because of the social conditions under which people live in different countries.

Dr. Humpstone (closing): I just want to add this one word: I do not believe, and most clinical psychologists do not believe, that the finding of a mental age score gives us very much help in the recognition or treatment of mental defects. We have gotten away from that. Intelligence quotients and mental age scores are all right for certain purposes. They do very well for differentiation of school children into groups, etc., but for the detection of specific defects and their treatment it is necessary to have more definite methods. Intelligence quotients were made for a specific purpose and have served it very well, but are not fine enough, and none of the group scales is fine enough, to give us vocational guidance. They serve to differentiate the dull and bright students, and they are going to be more and more useful as we have increased opportunity to study these groups and divide them. All children cannot acquire proficiency in reading, writing and arithmetic, manual training, etc., with the same ease and to the same degree, therefore, we shall have to divide our school program to fit the individuals for their work, to give a democratic education, to try to fit the education to the child according to what he can do instead of trying to force all children to do the same thing.

AN HISTORICAL SKETCH OF THE PHYSIOLOGY OF THE NERVOUS SYSTEM*

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Progress in neurology, like progress in other branches of medicine, began by moving from subjectivism to objectivism; from dogmatism to experimentalism. With newer methods of experimentation, however, it was necessary to overcome many difficulties and prejudices; huge structures of metaphysical phantasy and vast accumulations of intellectual débris had to be swept away before substantial progress could actually be made.

The fixed idea that the heart is the seat of the soul, and the vague idea of what the soul really is, proved an almost insuperable obstacle to progress. The widely accepted teaching of Cartesius, that animals are devoid of souls, caused experimentation on the cerebrum to be regarded as useless. The trend of thought, however, made it necessary to place the soul in some structure of the brain, but the fact that decapitated animals jumped around without their heads did not accord with this theory. It may be stated that animals were thus decapitated in order to provide amusement for the Emperor Commodus.

The new epoch began with Willis, the physiologist (1622-1675). The method of experimentation was surgical, the technic of which might be questioned by the modern surgeon. The work was usually performed through trephine openings, but sometimes the instrument, such as a knife or a trochar, was thrust directly through the bone without the preliminary trephine. No attention was paid to hemorrhage, usually there was no necropsy, and the depth to which the instrument penetrated seemed of little consequence. Thus, in operating on the frontal lobe, the ventricles, the basal ganglia, and even the medulla were often injured. The knife was usually swept through the brain in various directions until the desired result, such as a convulsion, was obtained. In operating on the cerebellum, the instrument occasionally slipped down the spine and injured the lumbar cord. For a long time such inaccuracies of technic were not discounted.

EXPERIMENTS ON THE CEREBELLUM

As a result of Harvey's work on the circulation of the blood, at the end of the seventeenth century, a change in investigative methods began. The first problem to be solved was, "What part of the brain is necessary for the continuation of the heart action?" The vital importance of the cerebellum was assumed, as a consequence of the danger of wounds in the occiput. This had been known to soldiers and priests of Homeric times.

According to the Arabians, memory is located in the cerebellum; others located hearing, the talent for music, motility, and will power in this organ. The cerebellum, being more or less alike in all animals, must, as still others taught, subserve a function present in all, that is, activity of heart, lungs, and intestines. Malacarne (1744-1816), believed intellectual development depended on the number of folds of the cerebellum. Reil considered the cerebellum an electric battery, or volta pile. Rolando (1773-1831) believed it to be analogous to the electric organs of fishes, and the seat of voluntary movement. Carus (1789-1868) believed it to be a ganglion, the spinal cord being a large nerve. Weinhold demonstrated that the nervous system works like a galvanic battery. He scooped out the brain and cord of a kitten, and the kitten appeared to be dead; he filled the cavities with zinc and silver amalgam, and it acted as if it were alive. Gall (1758-1828) made the cerebellum the seat of sex, based on the fact that in cerebellar apoplexies there was priapism.

Francois Pourfour du Petit (1644-1741) proved, for the first time, that longevity after operation depends greatly on the manner in which the operation is performed, and that it is not always the same in all animals. He proved definitely that the cerebellum is not the seat of sensation. Kaan (1715-1758) demonstrated that the medulla is really more important than the cerebellum; he inserted a knife between the atlas and the occiput, and the animals promptly died. Willis' theory of the importance of the cerebellum as the seat of life now began to totter.

Lorry (1725-1783), for the first time, hinted at the coördinating functions of the cerebellum in describing the movements of a pigeon, into whose cerebellum he had punched a needle. He, however, attributed this incoördination to weakness, but, like a true scientist, described truthfully what did not fit into the rubric of his theory.

*Presented before a meeting of the Osler Historical Society at Rochester, Minnesota, March 24, 1921.

THE CEREBRUM: HYPOTHETICAL TREATISES

Galen taught that the ventricles are filled with air, which is warmed in passing through the cribriform plate, and, when used, is mixed with mucus and discharged through the nose. In sneezing the air escaped from the ventricles.

In spite of the fact that technical procedures necessary for the investigation of the cerebrum were not nearly so great as for the cerebellum, the cerebrum was neglected, since it was thought not vital and hence not worth investigation. The fact, also, that animals did not have souls, precluded experimental work. Des Cartes' dogmatic teachings of cerebral localization were permitted to stand untouched. According to him the "spiritus animales" reside in the ventricles, but are controlled by the pineal body, which is regarded as of signal importance because it is unpaired, located where cerebrum, cerebellum, and cord join, and is composed of sandy concretions. He likened the cerebrum to an organ, the ventricles being the pipes. The soul, he said, plays like an organist, driving the spiritus from the ventricles through the hollow nerves which end in the ventricular walls. These anatomic violations, however, could not stand, and the theory vanished.

PATHOLOGY OF THE CEREBRUM AND THE DOCTRINE OF CONTRALATERAL INNERVATION

It was known in the days of Hippocrates that injuries to the right side of the head produce contralateral paralysis, but homolateral convulsions. Doubt was expressed from time to time, since conclusions were drawn from skull wounds and not from brain findings, and injuries by contracoup were neglected or unknown. Contralateral convulsions caused the greatest confusion, for how could contralateral convulsions and contralateral paralysis be harmonized? Valsalva was quite convinced, however, and, in looking for the responsible brain lesion, expected to find it on the opposite side. Not all theorists agreed with him, and much ingenuity was spent in trying to patch up a unilateral mechanism. Du Laurens, for example, stated that paralyzed patients lie on the well side, and the pus runs over to this side; the paralysis, therefore, is only apparently contralateral. Ballonius (1538-1616) explained the associated convulsions on the unparalyzed side as an effort of this side of the brain to throw off the lesion. Boerhaave believed that the lesion moves from one side of the brain to the other, an hypothesis which precluded all dispute. Even before the pyramidal crossing was known, Aretæus and others assumed, probably by analogy to the optic tracts, that all nerves cross and therefore the paralysis is contralateral. Light was finally thrown on the problem when the great French physiologist, Francois Pourfour du Petit, in 1710, described the pyramidal crossing under the pons.

COMPRESSION EXPERIMENTS AND CONSCIOUSNESS

Sopor, coma, syncope, sleep, and drowsiness interested the ancients. It was known very early that compression of the throat leads to loss of consciousness, and the Assyrians performed castration under these conditions. Columbus (1544) astonished his audience in Pisa when he produced unconsciousness in a boy by pressure on the carotids.

That pressure on the brain causes loss of consciousness was also known to the ancients. In the Memoirs de l'Academie, in 1700, is told the story of a beggar who had a large skull defect. For a consideration, he permitted pressure to be made over this area; he first saw thousands of sparks, then lost vision, then became comatose. Sleep was explained by pressure caused from dilating blood-vessels, which Lorry disproved, experimentally, by direct observation on a dog after having given him opium.

THE DURA MATER AND BRAIN MOVEMENT

Interest in brain movement was initiated by observation of the pulsating fontanel in infants and the exposed dura in injured skulls. The relation to heart activity and respiration was apparent; however, cause and effect were reversed. The Arabians taught that these movements are primary in the membranes, and thus it came that two views were advanced which led to bitter and long discussion, namely, that the brain was the cause of the movement and that the dura caused the movement. Berenger, among others, pointed out that the close adherence of the dura to the skull left no room for movement of the dura. This was not convincing. Fallopius said that the brain could not move, since it had no muscles, and that the movements must be due to the moon. Difference in viewpoint may be exemplified as follows: Du Laurens said that "movement of the brain is so apparent that a man must be insane to deny it," Riolin "didn't know," and Highmore "wasn't sure," but suggested it could be explained on the basis of lunar changes.

Willis stated that the brain cannot move, but that the dura has contractile fibers which bring

about the movement seen in sneezing, coughing, vomiting, and convulsions; the dura contracts actively and functions as an intracranial motor. Pacchioni (1665-1726) stated that it is made up of three muscles and four tendons which sink into the four chambers of the brain just as is noted in the heart, and that the dura pumps the fluid travelling through the nerves, just as the heart pumps the blood.

Ridley performed the crucial experiment. He exposed the dura in a dog and watched it pulsate for a quarter of an hour. He then removed the dura and was astonished to see the brain pulsate. He decided that the pulsation must be secondary to arterial pulsation. Lorry extended Ridley's observations to include the pulsating movements "of the intestine," that is, those seen in the epigastric region, stating that these, too, are caused by arterial movements and not by dural contractions. He supplied additional proof, when he found the brain would swell but would not pulsate if he tied a rope around a rabbit's neck.

The question of motility being settled, attention was directed to sensation. The stumbling block was, "How can the brain, which is insensitive, function as a sensory organ?" Again there was a split. Some stated that the organ of sensation is the dura, others, that it is the brain. Another difficulty in settling the dispute was that convulsions were looked on as an evidence of pain. Some writers were able to produce convulsions by pouring nitric acid over the dura, while others could not. It was ultimately decided, largely through experiments on the dura of the cord, that it is not the organ of sensation.

THE FUNCTIONS OF THE CORD

A fair knowledge of cord injuries was current as early as 600 B. C. From the days of Galen to the eighteenth century nothing new had been learned of it. The Chinese, who were opposed to dissection, believed that the cord ends in the testicles. Plato believed that it produced semen. Aristotle believed that, in contradistinction to the brain, it is hot and filled with blood, and identical in structure and function with the bone marrow.

Galen proved experimentally that portions of the body below the injured cord are paralyzed in sensory and motor functions. He proved that the cord can be sectioned lengthwise without producing paralysis; that the side cut is the side paralyzed. His experiments on respiration were particularly valuable. By cutting the cord at progressively higher levels, he found that the paralysis of the thorax became correspondingly higher; cutting it between the third and fourth cervical vertebræ abolished respiration entirely.

The importance of the cord was demonstrated by Whytt and Unzer, who found that cold-blooded animals might live a long time after decapitation. This introduced the controversy relating to voluntary and involuntary movements. The question was raised, "Why the nerves to the heart when the heart can get along without them?" Fontana (1730-1785) demonstrated to the satisfaction of the majority that irritation of the vagus does not produce changes. Scarpa was the first to show that irritation of all nerves does not always produce the same results, and that inhibition, as well as stimulation, may sometimes be obtained. This applies to the vagus nerve. The interpretation of the function of this nerve was so difficult that its connection with the heart muscle was denied in the face of the anatomic facts.

THE SPINAL GANGLIA AND PERIPHERAL NERVES

Galen believed that the purpose of spinal ganglia is to reinforce movement. Unzer regarded these structures, which had been neglected almost entirely, as organs presiding over impulses that do not reach consciousness. Vieussens believed they are for the purpose of storing nerve energy and serve to anchor the nerves. Lancisi stated that they contain muscle and act as little hearts to hurry along the nerve fluids. Fallopius called them *corpora olivaria*. Riolan coined the term *ganglion*.

In 1871 Caldani introduced a method of the greatest importance in the study of the nervous system, namely, the electric current. He demonstrated that stimulation of the anterior crural nerve moves the muscle. This observation was of the greatest importance, since it demonstrated that it is not necessary for a fluid to run through the nerves to produce results.

Erasistratus taught that there are two types of nerves, the motor coming from the brain, and the sensory coming from the dura. Galen asserted that the "harder ones," by which he probably meant the tendons, are for movement, the "softer" for sensation. These conclusions were based on the observation that sensation or motion might be lost independently. Both, however, were looked on as centrifugal, as was shown by Steifensand (1831) when he called attention to the fact that a bump on the elbow causes pain to run into the fingers. Even Burdoch (1825) was

convinced that every nerve is both sensory and motor. Trevaranus and Reil believed the myelin conducts sensation, the sheath motility. An attempt was made to explain the function of the posterior and anterior spinal nerve roots. Walker (1809) made a guess and stated that the posterior roots are motor, and the anterior, sensory. He narrowly missed becoming immortal.

Bell (1744-1842) found in 1811 that he could cut across the posterior roots "without convulsing the muscles of the back; but on touching the anterior fasciculus with the point of a knife the muscles of the back were immediately convulsed," demonstrating that the anterior roots are motor in function. He also had some ideas regarding conduction of impulses along the cord, but, on account of the pain that operation caused the animals, he refrained from further experimentation. In 1842 Magendie, so well known because of the foramen that bears his name, attempted to publish all of Bell's work as his own; however, Bell had many friends, and the attempted plagiarism was unsuccessful. Fodera, in 1822, was the first to cut the fifth nerve intracranially in a rabbit. This operation Magendie also tried to call by his own name the following year.

With regard to tracts in the cord, it may be said that Bellinghiere believed that the gray matter conducts sensory impulses, the white, motor impulses; and that the anterior fibers bring about flexion, and the posterior fibers extension. The principle of reflexes was still unknown. Zinn hinted at it, although he regarded the nerve plexuses as the medium. In 1883 Hall first explained the physiology of reflexes.

Dollinger believed that the purpose of the cord is to subserve automatic life, and Eschenmayer proved this mathematically. Inasmuch as these mathematical proofs were quite conclusive and appear rather frequently, I shall cite one as an example: cerebellum: : cerebrum: 1: 8. The root of physical nature is 1, of organic nature 2, of spiritual nature 3. Physical nature, being 1, has all root functions; organic, has squares; spirtiual, has cubes. Hence, cerebellum: cerebrum: : nature: spirit,—that is, as the arithmetic root of the organic root, 2, which is 1, is to the cube of 2, which is 8.

CEREBRAL LOCALIZATION

In 1796 Gall presented his ideas on the cerebral localization of functions before a society in Vienna. Although Gall's specific views were wrong he deserves much credit, since the fundamental principle is correct, and his localization of speech in the frontal lobe remains. Gall was the first to localize psychic activity exclusively in the gray matter, and believed that the medullary substance is simply a conductor. Phrenology started in his school days, when he noted that fellow students with a remarkable memory for words had prominent eyes; the faculty for verbal memory, he concluded, must be located in the frontal lobe above and behind the orbits. Granting this, why should not other faculties be thus marked on the skull. His fundamental observations were correct, but this critical sense was swept away by his enthusiasm.

Bouillau (1825), following the work of Gall and his colleague Spurzheim, located the speech area with more or less accuracy, and explained aphasia as a loss of memory of words or of muscular movements from which speech results. Dax (1836) demonstrated that disorders of spoken language are associated with lesions of the left cerebral hemisphere. Broca (1861), drawing conclusions from the undissected brain of an arteriosclerotic person, showed that lesions of the base of the left third frontal convolution produce loss of speech, or aphasia, aphemia, as he called it.

Gratiolet, in 1861, expressed the view that certain other senses such as vision must be similarly represented on the cortex, that the mechanism of complex psychic functions is not sharply limited to any particular area, but is brought about by intimate association, thus involving the entire brain. This constitutes, in essence, the view still held. The cortical localization of vision was demonstrated by Panizza, in 1855, and rediscovered by Hitzig in 1874.

SUMMARY

In this sketch of the physiology of the nervous system, covering a period of twenty-five centuries, only the outstanding tendencies and developments are briefly related.* No attempt has been made to cover the many signal advances made in modern times, partly because we are more or less acquainted with them, partly because our present knowledge is in a state of flux. Besides, the overwhelming flood of modern medical literature seems less impressive. We can view the in-

*One of the best presentations of the subject is that of Max Neuberger, "Die historische Entwiclung der experimentellen Gehirn- und Ruckenmarksphysiologie vor Flourens." 1897—Stuttgart, Enke.

numerable new and startling theories with greater equanimity. We learn from the past that many of our present ponderous and intricate supertheories are destined to collapse from want of substantial support. Many will perish after an entertaining, indifferent, or stormy career, while some will crumple, like Klingsor's castle, from sheer wickedness. While the experimental work of the ancients was crude in many respects, their theories are as creditable as our own. A survey of medical history shows us how slowly and by what great labor progress is made.

EYE COMPLICATIONS OF THE DISEASES OF CHILDHOOD*

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I have been prompted to choose the above subject, first, by reason of a very interesting eye complication in whooping cough, which I lately saw in consultation with the pediatrician in our Clinic, and which I will report in detail later; and, secondly, by the frequent discussions and questions that have arisen in our weekly conference meetings, in regard to the eye conditions which complicate other diseases in general, when the members of the Clinic talk over the cases of interest which present themselves or are under treatment in the various departments of the group.

Practicing in a group as I do, possibly I am called upon more often for examinations and referred work in the more simple eye diseases and complications than the eye specialist who is by himself receiving from the outside medical profession all of his referred work. It is the practice in our Clinic for every one to confine himself as far as possible to his special work.

While eye complications in the diseases of childhood are not exceedingly common in occurrence, it is important that they should be recognized early and the warnings that they bring taken heed of and the proper treatment for them instituted.

It will be possible for me to mention only the most prominent instances of ocular involvement, and I shall classify them under their respective headings. The diseases which I have chosen to consider in this paper with reference to their eye complications are scarlet fever, measles, diphtheria, whooping cough, and mumps.

*Presented before the Sioux Valley Eye and Ear Academy at Omaha, Nebraska, July 12, 1921.

Before attempting, though, to take up the various ocular complications under the diseases above mentioned, I consider it important to say a few words on the subject of conjunctivitis in general in as far as it deals with the diseases I have just mentioned.

Some variety of conjunctivitis is a common accompaniment of all the diseases, with the exception of scarlet fever, and, most common of course, is measles. It is surprising to me that the conjunctiva does not more often take part in the inflammation in scarlet fever, it invariably being accompanied by inflammation of the mucous membrane of the nose and throat, when we realize how common it is for the middle ear to become involved. It is my opinion that too much neglect and too little interference by everyone concerned is the general rule in caring for these cases of conjunctivitis, and many of our more serious eye involvements would not take place if they had been properly handled in the first place. I have found this, that it is not enough to tell the nurse or mother to keep the eyes washed out with boric acid, but we must instruct them carefully just how to irrigate and cleanse the eye properly and, possibly the most important of all, how to instill a bland ointment into the eyes in order to prevent the adherence of the lids and the subsequent danger of injury to the cornea when the lids are forcibly opened.

The following are some of the complications under their respective headings:

Scarlet Fever.—As is well known, albuminuria accompanies nearly all cases of scarlet fever. The most severe renal complication is that designated as post-scarlatinal nephritis (a diffuse nephritis), usually developing during the

third or fourth week of the disease, and it may even follow the mild as well as the severe cases.

An albuminuric retinitis, or a uremic amaurosis, very suddenly developing, may occur, greatly alarming the friends. The retinitis, *in itself,* presents a good prognosis, owing to the youth of the patient; also like the renal affection of pregnancy, it occurs often with a benign kidney lesion. But in kidney lesions not benign, retinitis albuminurica on the whole is of most unfavorable prognostic significance.

Optic atrophy in proportion to the retinal destruction may be expected. In differentiating the retinitis from the uremic amaurosis, we find in the blindness resulting from the uremia that the pupil still reacts to light, showing that the affection cannot be in the eye or the optic nerve, but must be higher up as the result of poisoning; also, in uremia the blindness is sudden and complete, while, of course, one's ophthalmoscopic findings would be negative.

Optic neuritis, orbital cellulitis, purulent choroiditis, and ulcus serpens are very rare complications of scarlet fever.

Measles.—As is well known, this disease in its first stages and preceding the eruption, is characterized by catarrhal symptoms of the nasal mucosa, photophobia, epiphora, and a hyperemic conjunctivitis, which generally disappear after two or three weeks without leaving any bad results behind.

In order to overcome the photophobia, these children develop a marked blepharospasm, which later increases the conjunctivitis and dread of light so that, owing to their weakened condition, a vicious circle is thus established. Only in exceptional cases does the conjunctivitis take on a blenorrheal or even a diphtheritic aspect. It is in these cases that the cornea is endangered. In poorly nourished children a chronic condition is often the end-result.

In addition to the routine treatment already suggested, Holt brings out a fine point in protecting the sensitive eyes of the patient, *e. g.,* that the bed should be screened, but not to exclude the sunlight from the sick-room.

Diphtheria.—In this disease eye symptoms play a very important part. The wide-spread effects seen in diphtheria are due to the action of the toxins which the bacillus produces during its growth on mucous membrane, entering the lymphatic circle or blood-stream.

It is self-evident that we may have a severe diphtheritic involvement of the eyelids and conjunctiva in themselves, as all mucous membranes are subject to the disease process. Fortunately, though, the condition is rare and is probably due to accidental infection rather than to extension through the lacrymal duct. Before the advent of antitoxin this almost invariably resulted in destruction of the eye.

In the more severe true diphtheritic form, the cornea rarely escapes. If the entire area of the conjunctiva is infiltrated and rigid the cornea is probably always irretrievably lost. The prognosis, therefore, in the severe cases is very serious, both as regards the eye, and with respect to life itself.

The most interesting and the most common eye complications in diphtheria are the paralyses which develop, usually making their appearance during the latter part of the disease or often weeks later, after the disease has run its course. They may follow mild cases, so mild in fact that a diagnosis of diphtheria was never made, maybe a vague sore throat.

Ross reports, in 171 collected cases of diphtheria, that the eyes were involved in 77 of the cases, in 54 of which the muscles of accommodation were involved. Rolleston reports 477 cases with ciliary muscle involvement in 236, or 53 per cent, and extra-ocular muscle, 80, or 18 per cent.

Paralysis of the intrinsic muscles is by far the most common. In paresis of accommodation we also have mydriasis, that is, a complete ophthalmoplegia interna, by an involvement of the 3d nerve branches which go to the ciliary muscle and sphincter of the iris.

Diplopia in the extrinsic paralyses and inability to read in the intrinsic cases are the most common complaints. The prognosis for these cases is, as a rule, very good, time and tonics being usually sufficient.

Mumps.—Edema of the lids may occur. Conjunctivitis, as well as chemosis of conjunctiva, the latter due to compression of the vessels of the neck, occurs. The lacrymal gland may participate in the involvement.

Optic neuritis, iritis and ocular paralysis have occasionally occurred. In a number of instances, permanent blindness results. Woodward collected twenty-three cases of optic neuritis and neuroretinitis.

Whooping Cough.—Conjunctivitis and epiphora are common in the prodromal stage. Photophobia and mydriasis may indicate the

transition from the catarrhal to the convulsive stage.

Most important here are the extensive hemorrhages, which, owing to the violent coughing, may be subconjunctival of the eyelids or even of the orbit. In the latter case, they may be so severe as to cause a proptosis. Cerebral hemorrhages may give rise to the most complex complications. Hemorrhages into the meninges are far more common than those into the brain itself.

The case which I desire to present is as follows, this is an abbreviated copy of the history taken from my file:

C. J., a male child, age 4. Personal and family history, negative.

In the first week of January, 1921, the child came down with whooping cough. The spasms of coughing were very hard and frequent in comparison with his little sister, who had the disease at the same time. During the first part of March, the coughing spells had begun to subside in frequency, but their severity remained about the same. About March 23d the child developed a bronchial pneumonia and became very sick. The first eye symptoms noticed by the parents were on the evening of the 26th, and during the time the child was having convulsions, eight or ten or more. The father states that the eyes appeared glassy. From this time on the child kept his eyes closed all the time.

On the 28th of March one of the general men of our Clinic saw the case for the first time. His examination showed both eyes closed, marked photophobia, moderate swelling of the lids, both eyes protruding somewhat, both pupils markedly dilated, neither of them reacting to light. Both eyes rotated out and upward, and the child could not straighten them. No meningeal manifestations elicited.

Within a week the doctor reports the movement of left eye normal with vision returning gradually in this eye and gradually reacting more and more to light, the right eye remaining the same.

Within a day or two after this I first saw the case, in consultation with the doctor. My examination disclosed the following; externals, negative, both eyes; right pupil completely dilated, no reaction to light. An exotropia of about 15°, combined with a hypertropia of about 10°, was present. Fundus was negative. Unable to determine any vision whatever. Left eye; vision for small objects. Pupil, reacting to light. Fundus examination showed a small hemorrhage just above the disc at 12 o'clock.

The parents were instructed to bring the child into the office for further examination as soon as the child had sufficiently convalesced. It was not, though, until the 28th of June that I saw the case again, the child having had three or four relapses, hence the delay.

On questioning the father again as to what he had noticed about the child's eyes, he made the following statements: About a month ago, the pupil of the right eye had become smaller, also when asked to look at him he could handle his eyes better. No vision in the right eye, very good in the left. I was unable to get the little fellow's vision in either eye. Right eye still turned out and up but only about 5°. There was no reaction to light with the good eye closed. The child slightly jerked, though, when I threw the light into the eye. Light cast in left eye caused both pupils to contract. No limitation to eye movements in either eye. Right fundus examination, possibly a slight pallor of the disc. Left fundus examination, the small hemorrhage had disappeared. Ears, nose, and throat, sinuses, and teeth, as well as physical examination, were negative.

It will not be out of place in this connection to mention some of the eye complications or sequelæ which, while not necessarily directly associated with any of the diseases of childhood mentioned, are due to the lower vitality which follows in their wake.

In the cachexia following severe cases we may have infiltrative, as well as suppurative, involvements of the cornea, which at times have led to the loss of the eye by panophthalmitis. Fortunately, this is rare.

Phlyctenulosis is a common after-complication, and with it often a blepharitis and lid eczema, resulting from the constant wetting of the lids. I know of no disease so common as phlyctenulosis that is more often incorrectly diagnosed, or not diagnosed at all. Sore eyes, pink-eye, and granulating lids are usually the histories obtained in these cases.

As you all know, the disease is a manifestation of a general systemic condition, often having its origin in a scrofulous diathesis. It is a disease of childhood and youth and generally ceases at time of puberty.

Scarlet fever, measles, typhoid, whooping cough, etc., are often its precursors with unhygenic surroundings. Insufficient and unsuitable nourishment also are contributory causes. The marked photophobia, combined with the blephorospasm and profuse lacrymation, are the chief manifestations. The little red eminences, the efflorescences, the size of a millet seed, developing at some point upon the limbus, the apices of which, breaking down, form a small superficial ulcer as a rule with the conjunctiva surrounding the eminences markedly hyperemic with the rest of the conjunctiva clear, is the usual picture presented together with the subjective signs already mentioned. The general treatment is of as much or more importance than the local treatment. Iodine, iron, arsenic, and codliver oil are all used extensively, and everything should be done that may possibly raise the resistance of the little patient. Locally, calomel and yellow precipitate of mercury are the drugs most frequently used.

Before closing, I wish to speak briefly of refractive errors and specially of *squint,* which are often made manifest by the childhood diseases mentioned.

How frequent it is that, in taking the history of the patient, the parents tell you that the child's eyes have been poor ever since he had the measles, scarlet fever, or some other of the childhood diseases. I think the majority of us are inclined to take these statements with more or less of a grain of salt, as there is little evidence in our literature upholding the childhood occurrence diseases mentioned as absolute causes in producing an ametropia. The insufficiency of accomodation complicating the childhood diseases is an established fact, and is a condition that occurs quite frequently. I wonder if we are not overlooking some of these cases. It certainly is not an infrequent occurrence to see patients who have come to you complaining of asthenopia in which your eye examination has disclosed an emmetropia, and you have advised the patient that the eyes are not the trouble and that glasses would be of no benefit, later to see or hear than the patient is wearing glasses with complete relief.

Lastly, the subject of squint. We do know that the squint is often a sequela, or at least appears to be so, of the childhood diseases.

Dr. Robert Von der Heydt, of Chicago, about three years ago, presented a paper before the Chicago Ophthalmological Society on "The Management of Squint." This paper later appeared in the Illinois Medical Journal of December, 1917, and, in my opinion, it covers the subject in the most desirable manner. Worth states that motor coördination power of the ocular muscles keeps the eyes approximately straight in the absence of any disturbing influence until the fusion center begins to develop, which is at the end of the sixth month, and that it is not fully developed until the end of the sixth year.

I shall not attempt here to give in detail Dr. Von der Heydt's management. In passing, though, I wish to mention some of the most important points he has brought out. First, the folly of burdening the parents with instructions as to the care of the patient for the long period of time that it often requires and expecting that they will carry the instructions out. I have reference here to the use of the amblyoscope, and the attempted use of atropine, patches, etc., with instructions usually given by the doctor in a little too careless a manner. He mentions, above all, the early care of these cases, and then the necessity of having the parents teach the child the recognition of numerals, so you may keep an accurate record of the visual acuity, in this way being able to measure the progress in the management of the case. The full correction of the ametropia present should be made under a careful retinoscopy, and, finally, to me one of the most important points is that careful instructions be laid down by the calendar as to the use of atropine, possibly the use of smoked lenses, or the use of the hollow black patch strapped with adhesive, to entirely exclude the light of the good eye, with a *definite* schedule for their use and a *definite* time for the patient's return for observation to be given by the doctor. His conclusion that perseverence and the adoption of a definite system often leads to surprisingly favorable results, is certainly well put.

WHEN AND WHY IS AN ELECTROCARDIOGRAM OF VALUE IN A GIVEN CASE?*

By Olga S. Hansen, B. S., M. D.
MINNEAPOLIS

1. What is the electrocardiograph?

The electrocardiograph is an exceedingly fine wire suspended between poles of a magnet and connected by electrodes to the right arm, the left arm and the left leg.

2. What does the electrocardiograph record?

The electrocardiograph shows the electric current which is generated every time the heart beats. It does not record a mechanical thrust of tissue like that of the apex beat or the radial pulse, nor an outline of the heart substance, like the *x*-ray, nor a picture of the heart sounds. It records the flow of current caused by the action of the heart muscle. The three tracings which form the standard electrocardiogram, are known as Leads,

*Presented at Minneapolis Clinic Week, Minneapolis, April 25-28, 1921.

I, II, and III because they lead the current from certain surfaces of the heart to the extremities where the electrodes are attached (right arm, left arm, left leg). They are also called "Derivations" (abbreviated to D1, D2, and D3) and must all three be compared in making an interpretation.

3. What is the electrocardiogram unable to tell?

It does not tell the force of the apex beat. A heart with distant sounds and small volume of pulse may give a large curve on the electrocardiogram. It does not show the presence of heart murmurs. It gives no direct evidence of valvular disease. It gives no direct evidence of the size of the heart, but only of relative increase in size,—that is, preponderance of one chamber over the other.

4. What does the electrocardiogram tell about a heart patient?

The electrocardiogram is essentially a record of heart-muscle activity. In the irregularities of the heart the diagnosis of sinus arrhythmia, of fibrillation, and of extrasystoles can usually be made clinically because of the understanding given us in the past by the early electrocardiographic work. In these cases tracings only corroborate our findings; but in multiple extrasystoles, in occasional atypical fibrillation, and in heart-block, partial and complete, the electrocardiograph only can make a diagnosis.

In the tachycardias, especially those paroxysmal in type, auricular flutter must always be suspected, and can be discovered in no other way than by the galvanometer.

Evidence of valvular disease is shown by the electrocardiogram only insofar as it affects the heart muscle. Certain signs in the electrocardiogram indicate preponderance of the left or of the right ventricle, and so give corroborative evidence of aortic disease or of mitral disease, though they are not absolutely diagnostic of these conditions. In dextrocardia the inversion of certain waves gives more conclusive evidence than any other means of examination; and other congenital lesions have more or less distinctive electrocardiographic signs. The myocardial degenerations and intoxications which lead to interference with the conduction of impulses through the heart muscle, can be demonstrated in electrocardiograms only. The prolonged conduction time from auricle to ventricle; the arborization block, interfering with the passage of impulses through the ventricular muscle; and the branch block which cuts off the direct route of impulse to one ventricle or to the other may not affect the rhythm or the sounds, but are of extreme importance from the prognostic standpoint, and can be discovered in no other way than by the electrocardiogram.

In digitalis therapy the electrocardiograph shows, by the inversion of certain waves, when the cardiac tolerance has been reached long before clinical signs of toxicity appear, and shows the continuance of effect on the heart muscle with an accuracy that cannot be approached by clinical signs.

An electrocardiogram of every patient suspected of cardiovascular disease, would undoubtedly reveal a great many conditions which could not be discovered by other means. Repeated electrocardiograms for control of all patients receiving digitalis would probably save us from many errors. Such opportunities would be ideal, but not practical.

The practical value of the electrocardiogram is in the diagnosis of unusual or complicated disturbances of rhythm and in the discovery of myocardial disease not otherwise demonstrable. It should be obtained in all cases of cardiac symptoms with doubtful or unsatisfactory explanation. Like other means of diagnosis, it should be interpreted along with clinical signs. A report of normal electrocardiogram does not necessarily mean a normal heart. A patient may be near death of heart failure and still have his conducting mechanism transmitting waves in a normal and orderly fashion. On the other hand, a heart temporarily under toxic influences may show a branch block or other signs of serious muscle disease which will disappear promptly, leaving no trace of disease.

THE
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COMPULSORY HEALTH INSURANCE

A paper read before the Minnesota Academy of Medicine, by Dr. W. A. Dennis, on this subject, presented a different aspect from that generally accepted, and he gave his hearers a good deal of light on the matter under discussion. It is quite evident, from Dr. Dennis' study of the situation, that he is not in favor of compulsory health insurance in spite of the fact that it is being considered by legislative bodies in the various states. But their viewpoint is one of investigation, propelled, perhaps, by a certain few who are urging the matter because they have insufficient knowledge of the details.

Apparently insurance of the people began in Germany and about the same time or perhaps a little later in Great Britain, and they have carried it to a point where it can be looked upon as a school of experience. Of course, the advocates of compulsory health insurance claim all sorts of advantages for it, but a careful scrutiny of the effect on employees shows that the disadvantages are preponderously greater than the advantages. For instance, in Germany the doctor who gets into a place where he is either obliged or forced to become a physician for the poor and to submit to health insurance work for the Government is really an object of pity and commiseration. Quite naturally, the fees are extremely small because the premiums paid by the people are small, and the fees paid by the Government are ridiculously small, considered from a professional standpoint.

For example, a doctor is obliged to work at tremendous speed, beginning at an early hour to make his visits in order to complete his task, and in covering his route he starts at the point the greatest distance from his office or home so that he may walk from one place to another and ultimately land in his consulting-room. He cannot afford to run a motor-car or hire conveyance of any sort, because that would put him in a different class from that of his patients. Then he sees a large number of people in his office, and he can give them only the most casual scrutiny. The longest time, as a rule, which a patient remains in his presence is approximately four minutes. How much can be accomplished in that time by an examination is well known to all men who practice medicine. He probably hears one or two complaints, he may ask one or two questions, and out of his file of prescriptions he selects the one which will, by some shot-gun process, possibly reach the mark—the disease. Then the patient is hustled out, and the next one brought in. At the end of his office hours he has probably seen thirty or forty people. He is then obliged to make his evening calls, which take his time up to a late hour. Quite naturally, he is overworking, overexerting himself in every way, has insufficient time to make investigations of any kind, insufficient time for food, and practically no time for study. He is one of a large number of medical men who are prostituting their profession and demoralizing their fellowmen, because he is forced to labor under a pernicious governmental system of medicine. The result, further, is that he depreciates very rapidly because he cannot keep up with his fellowmen. He hears nothing of the advances in medicine except as it may come to him by casual acquaintance or a casual meeting with another practitioner. He is tired, discouraged and disorganized mentally and physically, and yet he dares not drop his work for fear of his inability to earn a living after an experience of a few years in this sort of practice.

This description was based upon the experience of an American physician who offered to substitute for a German physician in the capacity of doctor to those who had health insurance. The picture is not overdrawn; if anything it is underdrawn. The same conditions exist in Great Britain, but perhaps they operate a little differently, based upon the experience of the man in

Germany. However, they are practically the same, and the end-results are almost identical.

No patient can be treated in this manner, and no physician can arrive at a definite conclusion, except by sheer guess-work, unless he has sufficient time for investigation. It is very much like the inspection of passengers on a steamship. Sometimes they discover a person with a disease and more often they do not, although these medical inspectors at shipping ports are keen, wide-awake men, and they can often "spot" a contagious disease or a chronic disability at a glance.

One can readily see the dangers which arise from compulsory health insurance, first, to the patient; next, to the doctor, and the medical profession in general, and, lastly, to the Government which has it under control. Governments will change, and politics enter largely into the scheme. The agitation toward the control of the public health by governments, under the plan adopted by Germany and Great Britain would be a calamity in the United States, and the end-results would be the same as they are in Europe, loss of self-respect; the people would look upon the medical profession as unprepared and inefficient, and, eventually, it looks as if the whole scheme would suddenly explode. No self-respecting working man who had any feeling toward his own health and the health of his family, if he knew what was done in other countries, would consider for a moment the employment of a compulsory health insurance doctor. Various industries throughout this country, however, employ contract men, as well as nurses, to look after the general health and the accidental injuries of the workers and their families, but this is done on an entirely different basis from that in Germany or Great Britain. And even here the men are underpaid, but, as a matter of experience, they do better work because they have a lesser number to care for, and their fees are better than they could possibly be if the Government had charge of the whole situation. It pays the mining company, it pays the miners, and all workers who are voluntarily under a fee system, that is, each miner pays about one dollar a month, at least it is deducted from his wages, a very small amount, and for that he gets medical attendance of a high order. Consequently, the difference between private medical care and governmental medical care is such that a comparison can be made in favor of the private individual or corporation.

PHYSICIANS' HOSPITAL FEES

Some time ago it was announced in the daily papers that the authorities of Johns Hopkins Hospital, in Baltimore, decided that no surgeon should charge more than one thousand dollars for an operation and that the medical men, and presumably the surgeons, thereafter might charge thirty-five dollars a week for daily visits to a patient. This was evidently an effort on the part of the authorities to standardize fees, because Johns Hopkins has a staff of surgeons and medical men who very often charge much larger fees than the present arrangement permits. We presume it is no violation of confidence to say that sometimes five, ten, or fifteen thousand dollars are charged for operations, and certainly some of the medical men in Johns Hopkins would charge anywhere from ten to twenty-five dollars a visit to their own patients in the Johns Hopkins Hospital. Impersonally, and speaking for the profession in general, we think most of the men in this part of the country would be quite willing to abide by fees regulated in such a manner. We are sure, if any hospital in Minneapolis should make the announcement that no surgeon should charge more than this, there would be no complaints; and we feel confident that most medical men would feel satisfied if they knew they were going to get thirty-five dollars a week for each patient they saw in a hospital. If there is anything THE JOURNAL-LANCET can do to promote this feeling of good fellowship among the doctors it will be done. This sort of dream state the editor is in at the present moment is not likely to spread, however. From his own personal experience he is quite satisfied if he can get fees from part of his patients, and oftimes a good deal less than the Johns Hopkins law allows.

The difficulty is that most doctors are poor business men, and they do not estimate their work at its proper value. The result is that they are imposed upon by all classes of people, from the poor up to the rich. The charity case usually demands a great deal of attention, and he offers the greatest and most energetic registration of "kicks" of any patient that we have to deal with. The people who are cared for by the general hospital, or other hospitals that are purely of charitable origin, are an exception to this. For instance, no one objects very strenuously to the treatment at a city hospital. Such patients are under a system and a form of mental discipline that they soon recognize, and they know they are being treated by the best men on the staff for

nothing. What patient would think of objecting to the line of treatment received at the Hospital for Crippled Children in St. Paul? The best of care, the best of medical and surgical attendance, and everything for the entertainment, amusement, and happiness of the patient are there.

In the private hospitals the matter is quite different. The man or woman who is able to pay a moderate fee appreciates the care that is received, and expresses gratitude, pressing it upon the doctor even if he does not cross his palm with a fee. And the doctor, inflated by this praise, often forgets that praise is not a very transmutable commodity. Praise does the doctor a great deal of good, of course, but praise and fees do him much more good. And if he would only look at his patient, and particularly his patient's family, from a little more commercial point of view, treating the matter as a business proposition, justly and ethically so, he would arrange for whatever payments could be agreed upon; and then he should insist that such payments be made at regular stated intervals, weekly or monthly, whichever seems most adaptable to the case.

There are too many of us who let our fees run on until the patient is well or dead. The result is that, if the patient is living, he has less respect for the doctor's business ability, and he shirks the payment of his debt. If the patient is dead, God help the doctor if he has to go into court to retrieve the money for his service, particularly if he has to go into probate court and have a lawyer for the deceased pin him down to what his services are worth. It seems to us that the difference between a lawyer collecting his fees and a doctor collecting his fees in probate court is so great that comparisons could be made odious. The judges for some reason (we suppose purely legal) almost unhesitatingly grant an attorney the bill that he renders, and we think one can say, with equal truthfulness, that the average court will disregard the fee demanded by the doctor for his services. The result is that he has to sue the estate in order to get anything out of it, and not infrequently he is denied this privilege. Sometimes he hesitates to do it, for fear an injustice will be done him.

Given a certain number of patients on a fair fee basis for both surgical and medical work, the average man in medicine will accept that proposition rather than take care of a large number of patients with whom he has no business agreement, and consequently depends on their thoughtfulness and gratitude and their willingness to compensate him for his services. Fee-bills are commonly pictured in the doctor's mind as useful in court proceedings, but they are wholly valueless, and the sooner they are abolished the better it will be. Something ought to be done, however, either through a business office or a collection agency, a credit association, or by written agreement, whereby the doctor is to get his fee. One of the stumbling-blocks in the carrying out of this proposition is, that the doctor is too easy, too good-natured, and too broad-minded to believe that his patient is not just as fair as he is himself. This is poor judgment on the part of the doctor, and only after he has been bitten and stung into a state of partial insensibility will he awaken to the fact that business methods are the safest and sanest methods of keeping himself and his patient in good repute. By this method he could pay some of his own bills; he would not keep his grocer, his butcher, or his tailor waiting. Some of the men in the country, of course, have an entirely different condition to meet. Those who do not associate themselves in groups wait for their pay, and perhaps the groups do, too, until harvest time or until the farmer has sold his livestock. Then they get a lot of fees in at one time; but in the meantime they have lost a goodly number of fees by not adopting business methods.

The following excerpt was received in one office and is apropos to the above subject:

"Dear Sir:

"I received your letter about what I owes you. Now be pashent. I ain't forgot you, and as folks pays me I'll pay you, but if this was judgment day and you was no more prepared to meet your God, than I am to meet your account, then you sure would go to Hell. Good by.

"John Smith."

THE MINNEAPOLIS COMMUNITY FUND

Practically all the volunteer public health activities of Minneapolis will participate in the proceeds from the city's "Community Fund," the annual campaign for which will be conducted the week of November 14-21. It will be remembered that last year physicians, dentists, and lay health workers of Minneapolis coöperated in a project to effect closer coördination in the activities of the city's volunteer health agencies by forming a federation of these agencies, known as the "Hennepin County Public Health Association." The Hennepin County Medical Society and the Min-

neapolis District Dental Society are members of the association.

Of the other bodies comprising this federation, the Hennepin County Tuberculosis Association, the Minneapolis Visiting Nurse Association, the Infant Welfare Society, and the nursing committee of the Minneapolis Red Cross are beneficiaries of the Community Fund.

The tuberculosis association conducts a continuous educational campaign against tuberculosis, and has been the means of getting a large number of suspected cases of this disease to physicians and dispensaries for examination and possible admittance into a sanatorium. It has also been instrumental in securing additional sanatorium accomodations for sufferers from tuberculosis in the county.

The Visiting Nurse Association, composed entirely of competent registered nurses, gave nursing care to more than 5,000 patients in Minneapolis during 1920. A total of 7,965 children under two years of age came, in one way or another, under the care of the Infant Welfare Society. Attendance at medical and dental clinics supported by the Community Fund totalled 11,171 for the year. Although these clinics provide free treatment for the needy, they make an investigation of each case applying to them, in order to guard against admitting persons who are financially able to pay the regular fees.

CORRESPONDENCE

TWENTY-SECOND ANNUAL MEETING OF THE AMERICAN RÖNTGEN RAY SOCIETY

Minneapolis, Oct. 20, 1921.

To the Editor:

The program of the above named society this year was of more than usual interest to all medical men, some of its features being epoch-making in importance. I think you readers will find a brief report of the meeting interesting. An attempt will be made in this résumé to give some of the more interesting points while striving to avoid a detailed report.

The subject of hyperthyroidism and exophthalmic goiter received considerable attention, the speakers being Dr. Holmes, of Massachusetts General Hospital; Dr. Allison, of this city; and Dr. Tyler, of Omaha. There seems to be a unanimity of opinion among Röntgen therapists that the experimental period has definitely passed and that *x*-ray therapy in toxic adenoma of the thyroid is the procedure of choice.

A new line of thought was opened up in the report of Dr. P. M. Hickey, of Detroit, upon the treatment of diphtheria carriers with lightly filtered *x*-rays. The work was done with the coöperation of the Detroit Board of Health and included sixty-five cases. In all but two of the bacili disappeared from the throat, nose, and middle ear after from one to three treatments. In the course of the discussion it developed that during the war Dr. Ledoux-Lebard, of Paris, had treated some of these cases with equal success.

Along the same line was the more complete report of Dr. W. D. Witherbee, of New York, upon the treatment of tonsils. He now regards *x*-ray therapy properly administered and controlled as a specific for selected cases of hypertrophied and infected tonsils. In a large series of his cases the tonsils have returned to normal, and all pathological bacteria, including the streptococcus hamalyticus, have disappeared after a few treatments. The technic is the same as that commonly employed for tuberculous adenitis.

The annual Caldwell lecture was given by Dr. Réné Ledoux-Lebard, of Paris, France. It was a scholarly review of the progress of deep Röntgen therapy as practiced in France. Germany sent two representatives, Professor Frederich Dessauer, University of Frankfort, and Dr. Hans Holfelder, of the Schmieden Clinic, Frankfort. Their papers were devoted to the physics and practice of deep Röntgen therapy and were nicely supplemented by Dr. Samuel Stern, of New York City, who gave a general review of this work as practiced in the various European clinics. All of these papers may be summarized about as follows:

1. The principles of distance, heavy filtration and high voltage (160,000 to 200,000) are being universally followed.
2. In the Schmieden, as well as the Erlangen clinic, and some others, cancer of the uterus and breast are no longer treated surgically, but solely by radiation.
3. All forms of sarcoma are treated only by radiation.
4. It is regarded as very bad surgical practice to operate before radiation.
5. Recent fractures are being treated with marked benefit, the claim being made that union is greatly hastened.

In the field of diagnosis there was much of interest. Pneumoperitoneum, which attracted so much attention at the Minneapolis meeting, was discussed but little. Dr. Case, of Battle Creek, reported a rather impressive list of accidents and four deaths from its employment.

Dr. William Stewart came to the defense of the procedure, holding that these accidents were due to faulty technic. However, it was conceded that this is a procedure to be employed with great caution and only under ideal conditions.

Dr. Mills, of St. Louis, presented a most interesting study of intra-intestinal tension, but this work is too new and too elaborate to review satisfactorily in this résumé.

A paper worthy of more than passing notice was that of Dr. Willis Manges, of Philadelphia, upon the Röntgen diagnosis of non-opaque foreign bodies in the air passages. He bases the diagnosis largely upon the presence of obstructive emphysema, without other lung pathology to account for it. In this way it is possible to diagnose cases even without a history of foreign body inhalation. Dr. Manges' association with Dr. Chevalier Jackson, at Jefferson Hospital, has afforded him an unusual opportunity to observe these cases.

Dr. A. H. Pirie, of Montreal, is always original and

interesting, and his paper this year was no exception. It pertained to that puzzling group of cases presenting themselves with symptoms following gastro-enterostomy. Sometimes the stomach fails to empty because the opening is too high or wrongly placed, and symptoms are relieved by placing the patient in certain positions after meals. The apparent opening and closing of the gastro-enterostomy is not due to any vicarious sphyneteric action, but to a difference between intragrastic and extagastric pressure, the former being increased during peristaltic contraction.

When the opening is too high to receive the benefit of peristalsis, a residue in the lower sac often results. One case of persistent vomiting was found to be due to aërophagy, and, when this was prevented by placing a cork between the teeth, vomiting stopped.

Dr. Lewis Gregory Cole described in detail a type of duodenal and prepyloris deformity, due neither to ulcer nor gallbladder disease, but to the so-called Harris membrane, a thin band of adhesions. This membrane, he says, frequently escapes the notice of the surgeon unless he is especially warned to look for it.

Accessory sinusitis was discussed by Dr. James Van Zwaluwenberg, Frederick Law, and George E. Pfahler. The *x*-ray report may be negative when the surgeon is able to demonstrate the presence of pus by clinical methods. Such a combination of circumstances should make the diagnosis and indicate a conservative line of treatment. On the other hand, there may be osteoplastic changes due to past or chronic infection, easily demonstrable in the *x*-ray plates, but without objective clinical manifestations. These cases require radical operative interference. The *x*-ray examination may be of great value to the surgeon, even though it fails to corroborate his clinical and operative findings. The surgeon must, however, learn to place the proper evaluation upon the *x*-ray report.

Dr. Pfahler demonstrated a screen and film holder made to fit inside the mouth for the purpose of obtaining radiographs of the sphenoid sinuses.

Next year's meeting will be held on the Pacific Coast.

FRANK S. BISSELL, M. D.

REPORTS OF SOCIETIES

PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE

The Annual Meeting of the Academy was held at the Town and Country Club on Wednesday evening, Sept. 14, 1921, Dr. W. A. Dennis presiding.

Reports for the year were read, and the following officers were elected for the ensuing year:

President, Dr. H. L. Staples, Minneapolis.

Vice-president, Dr. C. N. McCloud, Saint Paul.

Secretary-treasurer, Dr. H. P. Ritchie, Saint Paul.

Dr. J. G. Cross retired from the Executive Committee, which is now composed of Dr. W. A. Dennis, Dr. H. B. Sweetser, and Dr. J. T. Christison.

Dr. Oscar Owre showed two *x*-ray films of a case of kidney stone, wherein the diagnosis was made positive by a pyelogram.

Dr. Harry P. Ritchie reported a case of painless hematuria, as follows:

Mr. Wm. W., aged 50.

1. *Complaint:* Painless hematuria.

2. *History:* In 1917, while at a ball game had feeling of urgency, but held off until compelled, when he passed many clots. This lasted for forty-eight hours. Was cystoscoped in Chicago with negative findings. He passed blood for about three days afterward, when it stopped. Up to August, 1921, had had no trouble and so far as he knows passed no blood. In August noticed blood, not much in morning specimen, but during the day would increase until it seemed almost pure blood, and he began to feel weak. Frequency and urgency since bleeding began.

3. *Examination:* On August 24, 1921, was cystoscoped by Dr. Gilbert Thomas, to find gross blood in urine. Several small papillomatous growths in bladder. Hanging from left ureter was a small papilloma, which receded from view at times. Right kidney normal.

4. *Pre-operative Diagnosis:* Papilloma of pelvis of left kidney, with transplants along left ureter and in bladder.

5. *Treatment: Operation.* Through two incisions removed kidney and ureter intact on August 29, 1921.

6. *Specimen:* Shows massive papilloma of kidney pelvis and ureteral grafts.

7. *Comments:* This tumor is named in the literature as papillary carcinoma, epithelioma, and papilloma. Sixty-four cases have been recently reported from the literature by J. J. May. Diagnosis before operation is rarely made because there is no enlargement of the kidney sufficient to make it palpable and there are no signs usually present except the hematuria. In this case the demonstration of a papilloma peeking through the ureter made the pre-operative diagnosis exact.

The operation is somewhat difficult, but without reaction, as all work can be done extraperitoneally. Two incisions: first the usual one for nephrectomy, and, second, the one for ureteral stone. The latter may be made through the rectus or McBurney incision; the latter one I distinctly favor.

8. *Result:* The patient made an uninterrupted recovery and is prepared for follow-up treatment of fulguration of the bladder grafts.

It is interesting to note the massive tumor and the history of four years of no complaint or disability in his active work as switchman.

The specimen of kidney and ureter was shown.

The address of the retiring president, Dr. Warren A. Dennis, was given, the subject being "Compulsory Health Insurance."

BOOK NOTICES

THE MASTER OF MAN; or The Story of a Sin. By Hall Caine. Philadelphia: J. B. Lippincott Company.

The title and the sub-title of this story clearly indicate its purport. Scott, in "The Heart of Midlothian:" our own Hawthorne, in "The Scarlet Letter;" and Tolstoy in "Resurrection," have treated the same subject; and other eminent novelists have written upon the same theme. But Hall Caine surpasses them all. His hero al-

most enters Heaven in his devotion to duty, and almost enters Hell in his surrender to his "Master of Man;" and the consequences of his sin are shared by not a few others.

As a story the book is absorbingly enchanting. It is told in very simple language and there is scarcely a quotable line in it; yet it has more dramatic situations than can be found in any novel extant. The author is a master of the technic of novel writing. At no point does the reader find a statement or a phrase that he is impelled to criticize. If he would lessen the awful penalty of the sin, he is compelled by his sense of justice to hesitate in his wish to do so.

The book may be commended to medical men as it will increase their powers to warn the youths of the land against this "Master."

THE PRACTICAL MEDICAL SERIES. Vol. III. The Eye, Ear, Nose and Throat, edited by Casey A. Wood, C. M., M. D., D. C. L., Albert H. Andrews, M. D., and George E. Shambough, M. D. Cloth. Price $1.75. Pp. 382, with numerous illustrations. Chicago. The Year Book Publishers.

This volume, like its predecessors, presents a very careful review of the world's literature for the preceding year, in the subjects covered by its title. Notwithstanding the still noticeably small output of continental literature, the volume compares most favorably with the pre-war issues.

Many of the articles are so extensively reproduced that they are far more satisfactory than mere abstracts, and the frequent editorial comments, generously made where needed, add greatly to the value of the original articles. That the increasing tendency to recognize the importance of preventing disease has a wide application in the field of Ophthalmology and Otolaryngology is well emphasized in many of the articles.

While prepared primarily for the general practitioner, in order that he may keep abreast of current thought on these subjects, every busy specialist, because of the ready accessibility of the contents, will find this volume a most useful work for quick reference.

HORACE NEWHART, M. D.

NEWS ITEMS

Dr. Harold Rees has moved from Ogilvie to St. Paul.

The late Dr. P. A. Hilbert, of Melrose, gave that city $10,000 in his will for park purposes.

Dr. Floyd E. Best, of Wells, was married last month to Miss Louetta Hinderch, of Freeport, Illinois.

Dr. Frank J. Kucera, of Hopkins, was married last month to Miss Alma P. Foss, of Minneapolis.

Dr. D. I. Roush, of Ohio, made several addresses in Virginia and Eveleth during Health Week, Oct. 24-30.

Dr. Clara Edna Hayes, who has been practicing in Illinois, is now associated with Dr. Goldie E. Zimmerman in the practice of pediatrics in Sioux Falls, S. D.

The Bray Hospital of Biwabik has opened an office in Aurora, which will be in charge of Dr. Ford of that city.

Dr. F. L. Adair, of Minneapolis, read a paper at the October meeting of Upper Mississippi Valley Medical Society.

Dr. Frank L. Bradley, of Hopkins, died last month at the age of 77. Dr. Bradley practiced in Minneapolis over forty years.

Dr. Harry A. Bond, of Dillon, Montana, died last month at the age of 63. Dr. Bond has practiced over thirty years in Dillon.

Dr. M. J. Hammond, of Watertown, S. D., has become a member of the Northwestern Clinic of that city, conducted by Drs. Parsons, Preston, and Freeburg.

The Rochester Post of the American Legion is planning to establish an American Legion Hospital in that city at a cost of $250,000. The Mayo Clinic has tendered its services to the hospital, if built.

The number of cases of infantile paralysis in Minnesota has gradually decreased, but there has been a recent increase in the number of cases of diphtheria.

Dr. Karl H. VanNorman, first assistant director of Johns Hopkins Hospital, Baltimore, has been appointed superintendent of the Miller Hospital, of St. Paul.

Dr. Howard R. Weirick, of Hibbing, has been appointed a member of the Minnesota State Board of Control, to succeed the late Mr. F. W. Cappten, of Minneapolis.

The annual meeting of the Southern Minnesota Medical Association will be held at Mankato on Dec. 5 and 6. The program of the meeting will be ready by Nov. 10.

The American Academy of Ophthalmology and Otolaryngology, which held its annual meeting last month in Philadelphia, will hold its 1922 annual meeting in Minneapolis.

Dr. Alex F. Irwin, formerly of Minneapolis, who has been practicing in Cleveland, Ohio, for several years, has returned to Minneapolis and has offices in the Masonic Temple.

Dr. A. W. Skelsey, of Fargo, N. D., has gone to Philadelphia to take a full year's course in postgraduate work, in the University of Pennsylvania, in eye, ear, nose, and throat work.

Dr. Arthur T. Caine, of Anoka, has been appointed by Governor Preus, of Minnesota, a member of the Minnesota State Board of Health, to succeed the late Dr. P. A. Hilbert.

The Minnesota State Board of Health lost an efficient helper by death last month. Miss Agnes Bacon, who had been secretary of the Division of Preventable Diseases for sixteen years died on October 13.

The Executive Committee of the North Dakota Tuberculosis Association met in Fargo last month to plan for the biggest sale of Christmas seals ever made in that state. Like active measures have been taken in many other states.

Dr. Harold Diehl has been appointed successor to Dr. John Sundwall as head of the Student Health Service at the University of Minnesota. Dr. Diehl is a graduate of the Medical School of the University of Minnesota.

Dr. E. U. Skanner has been appointed director of North Dakota Public Health Laboratory at Grand Forks. Dr. Skanner has had wide experience in health work in Cuba, in the Canal Zone, in South America and in government service in the late war.

Dr. James Wiley Stribling, who had practiced for a number of years in Dickinson, New England, and other places in North Dakota, died on Sept. 26 in South Pasadena, Calif., at the age of 44. Dr. Stribling graduated from Northwestern with the class of '05.

At the annual meeting of the Minnesota Registered Nurses Association, held last month in Duluth, the discussion on proposed legislation to be sought in the future, indicated that the nurses will ask for a law basing registration upon personal qualifications, rather than upon a three-year term of training.

At the meeting of the St. Louis County Medical Society in Duluth last month the following officers were elected: President, Dr. C. L. Haney, Duluth; vice-president, Dr. O. W. Parker, Ely; secretary-treasurer, Dr. F. H. Magney, Duluth; delegate, Dr. W. A. Coventry; alternate delegate, Dr. A. N. Collins.

The Grand Forks (N. D.) District Medical Society at its meeting last month, had three papers with subjects well worth discussing, as follows: "Medical Ethics and Ethical Publicity," by Dr. H. H. Healy; "Some Problems of the Country Doctor," by Dr. James Grassick; and "Business Methods," by Dr. W. H. Witherstine.

The Division of Venereal Diseases of the Minnesota State Board of Health (the Board of every state probably has the same experience) reports that not a few specimens reach them without sufficient data, even without the sender's name, to enable the Board to make examinations and report. Why?

The Ladies' Auxiliary of the St. Louis County Medical Society were entertained at dinner last month by Mrs. E. L. Cheney of Duluth, when a program for the active work of the winter was adopted. Are many other like auxiliary societies doing likewise?.

The Women's Co-Operative Alliance of Minneapolis, engaged in social and health work, brought Dr. Winfield Scott Hall, Dean of the Medical School of Northwestern University, to Minneapolis last month for a series of lectures. He spoke at about thirty meetings, reaching splendid groups of men and women.

It is reported that a considerable number of hospitals in this territory, including several in the Twin Cities, were recognized as standard hospitals by the American College of Surgeons at their meeting in Philadelphia last week; and also the list of members was likewise increased. We shall give the names of all such hospitals and surgeons in our next issue.

Dr. C. Eugene Riggs, President of the Minnesota State Medical Association, gave a Mayo Foundation lecture Tuesday, October 4, in the assembly room. Dr. Riggs repeated his presidential address, "Minnesota Medicine in the Making; Personal Reminiscences," which he gave at the meeting of the Minnesota State Medical Association in Duluth, August 24.

Dr. Thomas S. Roberts, Professor of Ornithology and Associate Curator of the Zoological Museum of the University of Minnesota, presented a lecture on Itasca Park, Friday, September 23, in the lobby of the Mayo Clinic, Rochester. The lecture was under the auspices of the Mayo Foundation Chapter of Sigma XI and the Rochester Unit of the Minnesota General Alumni Association.

Dr. Gilbert J. Thomas, Assistant Professor of Urology in the Medical School of the University of Minnesota, contributed an excellent article to our last issue (October), and, as if in compliment to him, made him associate professor also in "Psychiatry," which, of course, he is not. A printer's strike has been on in the office where our work is done, and all errors in our pages are naturally due to this cause.

Dr. Ernest Hammes, of St. Paul, will present a neurological paper at the next meeting (Nov. 8) of the Sioux Falls (S. D.) District Medical Society. Dr. M. A. Stern, of Sioux Falls will read a paper on "Intraspinal Therapy in Tabes."

Sir Harold Stiles, of Edinburgh, Scotland, presnted a paper on "Brachial Plexus Neuritis Caused by Pressure of the First Rib," before the meeting of the general staff of the Mayo Clinic, on October 12. He also delivered a Mayo Foundation lecture on "The History of Medicine in Edinburgh," Friday, October 14.

The health officers of the cities, villages, townships, and counties of Minnesota will hold their annual Sanitary Conference on Nov. 3, 4, and 5 in Minneapolis, under the auspices of the State Board of Health. This Conference is but one of the public health agencies that meet at the same place and time as noted below.

When the Surgeon General of the United States points out one of the hundred or more large hospitals in charge of the wounded and disabled of the World War as a "marvel of efficiency" with the best staff that he has yet found in his tour of inspection, the medical profession and the public may well "stop and listen." And this is what Surgeon General Cummings says of the former Asbury Hospital (now U. S. Public Health Service Hospital No. 68) of Minneapolis, of which Dr. H. M. Bracken, formerly the executive officer of the Minnesota State Board of Health, is the officer in charge. Dr. Bracken did the same efficient service in his former place, but his critics were not experts in each case.

The United States Public Health Service, the American Red Cross, the University of Minnesota, the Minnesota State Board of Health, the Minnesota State Board of Control, the Minnesota State Advisory Commission for Tuberculosis, the Minnesota State Dairy and Food Department, the Minnesota State Live Stock Sanitary Board, the Minnesota State Sanitary Conference, the Minnesota Public Health Association, and the American Waterworks Association, hold public health meetings at the University of Minnesota on the 3d to the 5th of this month. As many of the leaders in these organizations are physicians, the meeting will be one of vast import to public health interests. The program covers the various aspects of public health, and many notable men and women in public health service will give addresses.

Dr. Joel C. Hultkrans, of St. Paul, was married last month to Miss Opal Welch, also of St. Paul.

PRACTICE FOR SALE

Unopposed practice for sale in a county seat town of 655 in Southwestern Minnesota. Fine farming country; crops good. Nearest competition 12, 14, 18, and 24 miles. Catholic preferred. Price of property, $4,300; $1,200 cash. Address 177, care of this office.

LOCATION WANTED

A young physician with good surgical training desires a location with hospital facilities. Can locate immediately. Will pay a reasonable price for office equipment. Highest of references. Address 180, care of this office.

ONE NEW HEIDBRINK GAS MACHINE FOR SALE.

Will sell above machine for half price. It is new and includes a portable case for the machine. A. B. Eastby, 116 West Grant street, Minneapolis, Telephone, Atlantic 4898.

LOCATION OR LOCUM TENENCY WANTED.

Location in a prosperous community, or will act as locum tenens for the next six months. Address 182, care of this office.

FOR SALE VERY CHEAP.

An oak operating table; a walnut examination chair; and a Eureka nebulizer with motor are offered at a nominal price. They were used by a leading Minneapolis physician until his death a short time ago, and all are in good condition. Address 185, care of this office.

OFFICE POSITION WANTED.

A graduate nurse who has had large experience in giving ether and nitrous oxid, and can do some x-ray work, desires a position as a surgical assistant or in a clinic. Will go out of the Twin Cities if necessary. The highest of references given. Address 184, care of this office.

LOCUM TENENS WANTED

I desire an unmarried man to take my practice for three or four weeks from Oct. 14. Address 176, care of this office.

FARM PROPERTY FOR PRACTICE IN CITY

I will exchange my equity in a fine Eastern North Dakota farm for practice in a city with residence or city property. Address 179, care of this office.

OFFICE ROOM FOR RENT IN MINNEAPOLIS

One room and joint use of reception room in a physicians' and surgeons' building in Minneapolis. Tel. Main 8541.

PHYSICIAN WANTED

A good doctor is wanted in Dent, Minn., a town of 300, in a fine dairying country with a very large territory. Address Dent Commercial Club, Dent, Minn.

BOOKS AND APPARATUS FOR SALE

The books, instruments and two operating chairs, a physician's McCaskey account and register system (practically new), and a Schneidel Weston *x*-ray machine complete, belonging to the estate of the late Dr. Barrett of Glencoe are offered for sale. For particulars inquire of F. R. Allen, Glencoe, Minn.

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DIAGNOSIS AND TREATMENT OF OSTEOMYELITIS*

BY A. C. STOKES, M. D.
OMAHA, NEBRASKA

Osteomyelitis is an acute infection of bone which may, and often does, become chronic.

Osteomyelitis of external wound origin is represented by bone infection following compound fractures, gunshot wounds, and other open bone injuries. It presents many of the same symptoms and much the same pathology as that presented by osteomyelitis of hematogenous origin. The treatment, however, is considerably different, especially since cases of external wound origin present no period of acute closed infection.

The urgent cases of acute osteomyelitis represent only those of hematogenous origin, which occur largely in the long bones of children. In order of frequency the records show the following bones affected, viz., femur, tibia, humerus, radius, ulna, fibula and bones of the skull and the pelvis.

The acute form presents a most imperative surgical condition. It is as necessary to make an early diagnosis of acute osteomyelitis as it is that of a ruptured appendix or a perforated gastric ulcer. It demands early surgical treatment if the limb is to be saved from either a long period of infection or entire loss.

The symptoms of this form of infection are, in order of importance, sudden onset with pain, high temperature, tenderness, swelling, local redness, history of trauma, either real or imaginary, and considerable prostration.

The sudden onset of pain accompanied by high temperature and chill in a long bone near a joint in a patient under twenty-one years of age, should be considered presumptive evidence of acute osteomyelitis. If, in addition to pain, there be tenderness within two or two and one-half inches of a joint over a certain small area, the diagnosis is likely, and if, in addition to this, swelling and redness is observed, immediate surgical intervention is justified.

The symptom of pain, although the first subjective symptom of value, is often a rather late one; and some writers question whether pain is not due to pressure on the periosteum, thus indicating that the bone is perforated before the beginning of pain. It is, however, probable that pain begins when the developing toxins increase the intra-osseous pressure.

The sequence of events generally follows in much the same order and requires from twenty-four to thirty-six hours to complete the picture. No doubt, during this time infection has escaped from the point of the embolism or thrombus at the terminal artery in the diaphysis of the bone, and how far it has spread during the first few hours cannot be determined, but in

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a considerable number of cases the entire bone marrow is flooded with infection. Localizations may form and perforate the bone cortex at a given point, and may be opened and drained; and subsequent to this other localized abscesses may do likewise, and so on. This process then becomes chronic and may continue for years.

The study of typical cases, however, leads one to the conclusion that if the original focus is drained early, other localizations do not recur with acute symptoms, or may not appear at all. In other words, if the intra-osseous pressure is relieved early the natural body defenses will control the adjacent infection in a certain percentage of cases. If localizations have occurred they may become latent, requiring months and sometimes years to develop, or subside entirely, leaving a residue which results in bone cysts or localized areas of sclerosis or softening.

The problem then is early recognition and proper drainage, that is, as in acute appendicitis or perforating gastric ulcer, the bone should be treated surgically in the first twenty-four hours after the beginning of the symptoms, because the earlier the bone is opened, the sooner the extension of the infection is limited and the less frequent the sequelæ. Early diagnosis and surgical treatment are, therefore, mandatory.

The point of greatest tenderness is the point to be chosen for operation. The incision must be carried through the tissue and bone into the marrow. The opening is made through the bone best by the use of a dental drill, or burr, or trephine, or Hudson drill. Hammering, pounding, and chiseling an infected bone is a crime. The greatest care should be used in surgical approach to the abscess. If pus is found, the edge of the bone should be rongeured off as far as the abscess cavity goes, in order to give free drainage. The management of the soft tissue is most important. The muscles and fascia above the cavity must be kept wide apart. Tube drains or little bridges made of hardwood placed between the soft parts are often valuable.

Any method may be used for keeping the wound open, except packing with gauze, or pouring oil, or bone wax, or any substance which fills the lymph spaces in the bone in acute osteomyelitis. Gauze is the common plug that is put into the bone. This is a relic of antiquity and should never be used, not even iodoform gauze. One must lay down the dictum with more than ordinary emphasis: "Keep muscle and skin and fascia apart, and let the wound heal from the bottom." This is no more nor less true of osteomyelitis than it is of a boil on the back of the neck, for, pathologically, they are one and the same process and require unobstructed drainage. Bone, however, requires a longer time to reform and this condition must be allowed for.

It has been written and repeated that one should never remove bone beyond the abscess cavity. Of course, care and judgment must be used in all cases, but the general principle must hold for bones, as well as for the abdomen, namely, the opening of new avenues of infection will not be dangerous if the drainage is good, because the law of the direction of least resistance will obtain, and the infection will drain toward the surface skin.

The incision in the soft parts is frequently too small. It should be large enough to give plenty of room for a complete operation. A good view of the area should be had and sufficient bone removed.

At operation one may find one of several contions:

1. A simple abscess under the periosteum, so that, when incision is made through the periosteum, pus flows out. Some surgeons stop here. Most of these cases become chronic, and after months or years develop other abscesses, which, in turn, produce another acute exacerbation and another sinus and more dead bone. An involucrum and sequestrum have usually begun at this time.

2. There may be only a local rarefied area of bone, the periosteum not inflamed, and no pus under it—the bone soft and small sieve-like perforations are seen. This is an early stage of the disease, and lucky is he who finds this case, because no periosteum has been removed from the bone and no sequestrum or involucrum begun.

3. There may be a well-established sinus with a perforated periosteum and pus in the surrounding soft parts. In any of these cases, the simple establishment of a small hole in the bone and a small opening in the soft parts are not sufficient to give proper vent for the pus. *There must be* (we repeat) *complete drainage,* and to get this we must have a complete operation.

4. Often at late operation in acute osteomyelitis one finds not one sinus extending into the marrow of the bone, but multiple sinuses in different parts of the bone.

Keen says, in his last volume, "incomplete re-

moval of parts of the diaphysis of bone allows the infection to extend through the medulla and do much destruction."

The line between acute and chronic osteomyelitis is often not perceptible—most cases are chronic before they are diagnosed. Many of these should be diagnosed; others cannot be diagnosed quickly enough to prevent extension and metastatic abscesses, bone destruction, periostitis, and the formation of sequestrum and involucrum.

The bone enlarges, becomes irregular in outline, and oftentimes bowed. The infection usually remains in the diaphysis, and it is only in late cases and older patients that the joint becomes infected. When this occurs it usually means amputation. The periosteum is thickened and shows the results of a hyperplastic inflammation. Soft parts are very adherent to bone.

The recurrence of osteomyelitis is frequent, and one of several conditions may be responsible:

1. Localized bone pus in the bone marrow or cortex suddenly activated by trauma or lowered resistance, or both.

2. Infected areas between a sequestrum and involucrum.

3. Subperiosteal infection, more or less latent.

The history of old recurring osteomyelitis is much as follows: An acute exacerbation, the physician is called, the abscess is opened, and perhaps the sinus in the bone is enlarged. The patient recovers; the sinus closes, and the patient is discharged; in a month, or year, or five years, the patient returns with another sinus, and the same performance is repeated; and so on ad infinitum until the process either wears out the patient or the limb is amputated. In one of our cases this process had continued for twenty-four years, and during the productive age the value of this man to society was nil, to say nothing of the pain of seven or eight operations and the suffering from repeated chronic inflammation.

The object of this paper is to bring this fact forcibly to your attention and to suggest some methods of procedure, in both chronic and acute osteomyelitis, which may partly reduce this great loss to the community and to the individual.

The diagnosis of chronic osteomyelitis is so simple and self-evident that, generally, it needs no comment. There is the history of the acute infection and the change in form of the bone with old irregular nodules. Having established the diagnosis of chronic osteomyelitis, it becomes necessary to study it with a view of determining the condition of the bone, the presence of sequestra, of localized abscesses, of involucra, and the condition of the periosteum .

In this study our most valuable aid is the *x*-ray. Either rarefaction or calcification must take place in a bone before the *x*-ray adds anything to our knowledge. Therefore, in acute infections of bone, it is some time before the *x*-ray shows anything of value. In chronic osteomyelitis, however, it aids in determining the presence of sequestrum, involucrum, or of localized metastatic abscess. Frequent and continuous use is made of it. Other aids are shape of the bone, which is often bowed irregular and shows the results of numerous sinuses and probably several operations. The periosteum is thickened and can be felt beneath the soft tissue. Nichols recommends the use of a sharp awl-like instrument which will readily pass through the involucrum but stops at the sequestrum. Outside of treatment, one finds—

1. Localized areas of pus in the bone-marrow sometimes at one end and sometimes at the other and sometimes in the shaft. By means of the *x*-ray these abscesses may be located, and drained according to the principles laid down above. This often requires opening the bone in several places and perhaps finding several areas of softening in the cortex or marrow surrounded invariably with sclerosis in marrow and cortex, but not necessarily with sequestrum. A thorough cleansing of these cavities oftentimes completes the process. The attempt made to sterilize them and fill them with some foreign substance is to be condemned in no uncertain manner.

2. *Infection around the sequestrum:* If the sequestrum is loose, the treatment often is simple, namely, remove the sequestrum, drain, and the patient recovers. In certain cases, however, the sequestrum is not completely free. Then comes the question as to what to do. The sequestrum never loosens until the endosteum is destroyed, that is, the circulation to the bone is cut. The involucrum begins to form the minute the extension of the infection through the cortex of the bone begins to raise the periosteum; and the further the periosteum is raised from the bone, the greater the bone-destruction. The sequestrum then becomes a foreign body, and prevents drainage, or the continuous death of endosteum and extension of infection to the Haversian system continue the destruction of bone.

Nichols has made a study of chronic osteomyelitis, and has laid down the following principles of treatment from the surgical point of view, and I believe them to be proper, though radical:

1. Removal of the necrotic sequestrum before a definite involucrum has formed while the *periosteum is still* plastic. This operation can be done early only in case of infection and in cases where there are two bones in the leg. It consists in dissecting the entire shaft from its periosteum and removing it either in its entirety or for a part of its length, leaving the periosteum and sewing up the same and allowing bone to form within this periosteal tube. This operation has given excellent results in many cases. It requires careful judgment and a mature surgical experience to determine the character of the case to which this method is applicable.

2. *The removal of sequestrum when there is only one bone.* If done too soon, the muscles retract, and the limb is deformed; on the other hand it has been definitely shown that the involucrum will not produce from within, if the periosteum has arrived at any thickness or rigidity. In general, Nichols claims the sequestrum may be removed when the entire thickness of the involucrum is equal to one-half of the normal shaft. After such an operation, splints must always be used. This operation is long and oftentimes fails.

3. *Treatment of the chronic stage with dense involucrum and extensive sequestrum.* This is the form which is the greatest problem. It is generally of long duration. If the sequestrum is loose, it may be readily removed and the area drained and the bone allowed to reform if it will. In many cases, the inner side of the involucrum does not continue to proliferate, and so, if the sequestry is removed and there remains a large infected, discharging trough in the bone. Many methods have been devised to correct this. These troughs have been filled with sea-sponges, wax, vaseline, and other substances. The procedure is generally to attempt sterilization of this ragged, infected area by means of pure phenol and alcohol, and then fill the bone trough with some one of the above substances. Obviously, this procedure must fail in a very large percentage of cases.

In many cases the sequestrum is fast in an eburnated area of bone. The bone-marrow is sclerosed within the sequestrum, and the sequestrum is surrounded without by an involucrum. The technic of the operation is more difficult in this case than in those cases where the sequestrum is loose.

In most chronic cases of osteomyelitis there are, or have been, several sinusues, some healed and some discharging. The sequestrum is often in several parts, eburnated bone being situated between the ends of the same.

Without going further into the literature of this question, I wish to close with a short description of what we believe to be the proper procedure in the old chronic forms. The cases where this operation has been carried out have made a good recovery except two. One died about two hours after operation, and the other had fracture of the remaining portion of the bone, but has made a good final recovery.

The operation is as follows:

Make an incision through the soft parts over that portion of the bone which is nearest the surface and farthest from large blood vessels and nerves. Strip off the periosteum over the roughened area of bone. With a circular saw attached to a motor, remove a small V-shaped portion through the cortex of the bone, extending from normal bone-marrow to normal bone-marrow along the diaphysis. This incision should go through the involucrum and the sequestrum and the sclerosed endosteum to the point where the old marrow cavity previously existed. This piece is for diagnostic purposes.

The V portion is then examined and one is able to determine how much of the bone is sequestrum, how much of it is involucrum, and what portion of the area is eburnated. The entire diseased area of the bone may then be removed with a circular saw, leaving only a small inverted V of bone on the opposite side. The part remaining is from a third to a quarter of the shaft of the bone, depending upon the amount of diseased bone which it is found necessary to remove. In other words, a small portion of the bone is left, usually at the opposite side of the bone from where the disease has been most active, and usually the part of the bone which is still more or less normal. By this method no overhanging edges or cavities remain, only a small shaft of the bone to maintain the normal length and prevent muscular contraction. The hyperplastic periosteum and remaining soft tissues are allowed to fall down upon the smooth cavity covering it over completely and snugly, leaving

no holes or edges, no areas where nature must perform miracles in healing and no localized abscesses or an opportunity for recurring infection.

I have done this operation thirty-four times, and can highly recommend it. We feel sure that the above operation, while radical, is the final answer for the cure of chronic osteomyelitis, in which areas of eburnation, involucrum, and sequestrum exist after years of recurring infections, sinuses, and inflammations.

If a circular saw is used it can be done rapidly without loss of blood, and very little time is required for such a large operation, and the shock is comparatively little.

DISCUSSION

Dr. Percy Peabody (Webster): I think we all feel indebted to Dr. Stokes for his clear and concise presentation of this subject, and the fact that he is laying down definite rules for our guidance in the surgical handling of these cases. He emphasizes the fact that here we have one of the emergency surgical conditions presented to us, and it is not secondary to any acute surgical condition. His paper shows the results and the trouble that may arise, with the disability that results from neglect of radical treatment of these cases at the earliest possible moment.

I have nothing to add of particular interest. Several patients have presented themselves to me with pus formation. These cases have come late; and under a mistaken diagnosis they have been treated for rheumatic conditions. It is one of the things we fall down on, and yet in a case in which the trouble comes on with such suddenness, in which the focus of infection is so isolated, the diagnosis should not be difficult, particularly in conditions of the joints.

There is one point in regard to the diagnosis of osteomyelitis, and that is this: In cases in which there is trouble near the knee-joint in rheumatic conditions or secondary infections in some joints, you get a primary swelling in the joint. You never get that swelling in an osteomyelitic condition in the diaphysis of the bone. The swelling is below the cartilage and not through the cartilage. If you get involvement it is always secondary to an involvement or osteomyelitis in the bone itself. It comes up around the cartilage up through the secondary involvement.

Dr. T. F. Riggs (Pierre): This is certainly a most interesting and instructive paper. I know of nothing that is more troublesome than the handling of osteomyelitis. You all know that it means a great deal of patience on your part and on the part of the patient, and it may be a matter of years with a guarded prognosis as to the outcome. Certainly, there will be an immediate recovery.

I was interested in what was said as to the necessity of diagnosis of the acute stage of osteomyelitis and what Dr. Peabody said in regard to the diagnosis of the acute stage in the shaft of the bone.

It has been our unfortunate experience to have had in the past seven or eight months three cases of osteomyelitis of the os calcis, and I dare any man to make a perfectly frank diagnosis of osteomyelitis of the os calcis as against an acute arthritis or so-called articular rheumatism in the first twenty-four hours, and yet if he would save trouble he must make the diagnosis in the first twenty-four hours. But we did not. In the second case we did better than in the first. In the third we did better than in the second, but all three have been very tedious cases to handle. Up to this time I had never seen a case of osteomyelitis of the os calcis, and I was not sure that such infection occurs. I have the idea it is rather rare. It seems to have followed some form of so-called influenzal infection, but with all three of our cases there was a history of an acute sore throat which made it difficult for us to make a differential diagnosis between osteomyelitis and acute arthritis. In one case the joint surfaces were involved. In all three cases the primary focus seemed to be in the upper posterior portion of the os calcis. We were able to save the periosteum of the os calcis in two cases fairly well, so that one child now has beginning bone-formation and will have a useable foot. He will have to have a pad in his shoe to elevate the heel. In one case the infection seemed to travel forward from the posterior portion into the anterior portion of the os calcis, that is, toward the toes, and the mobility of the foot has been greatly affected, but the resting place of the heel is not involved and the child has a good foot. The third case is in too acute a stage to make any definite prognosis. All three of these cases were taken at night with the initial pain.

What Dr. Stokes said about the treatment of the chronic form of osteomyelitis is very interesting. Once in a while you can get away with a blood-clot closure, and if this can be done you will have saved the patient much time. If not successful you run the chances of having extension of the infection upward and of having to remove still more bone at the second operation.

This is certainly a very interesting subject, and I hope a number of the members will discuss it.

Dr. G. G. Cottam (Sioux Falls): One feature has not been touched on that is quite important. Besides the two main features involved, there is a third. The first proposition deals with the acute stages; the second proposition is to restrain infection so that complete recovery may take place from the infection. Regarding the third proposition: Very many of these cases occur in growing children, and in the great bulk of them the disease is apparently located around the epiphyses. There is an arrest of growth of the extremities so that there is obvious deformity.

If you will glance over the table exhibited by the essayist, you will notice that seven out of his fifteen cases are under the age of twenty-one, the period in which fusion of the shaft and epiphysis takes place. Infections occurring at that age lead to deformity if the condition is not recognized early enough to head the trouble off.

So far as the acute proposition is concerned, there is no difference of opinion now as to indications, first, in getting the diagnosis established, and, second, in draining the cavity adequately. Unfortunately, as long as we continue to diagnose emergency cases as acute rheumatism or acute arthritis and watch them on that basis, so long will we continue to see cases that come under our observation to try and remedy the deformity.

In the chronic type of cases it was my fortune to see a large number of these in the war injuries. We learned this about them: We saw these men over a long period of time. I know, after I got back Fort Des Moines was a center for these osteomyelitis cases, and we had a good many of them at Fort Riley after that. We found by the use of the *x*-ray we could keep close track of the pathological anatomy of these cases, and I was impressed by one feature, and that is, in order to clear up these cases we had to get rid of the retention of infection rather than anything else. There was always in these old drained cases a great deal of overhang of the cortex of the bone. The medulla itself was greatly undermined. We chiseled the overhang, but the case would keep on suppurating, and we found there was still more tissue destruction. So we kept on and on with the treatment. A large number of our old drained cases had to undergo periodic reoperations. There is a tendency for these cases to form this overhang and to keep up indefinitely, so that it was very essential to get adequate drainage in order that the pus might get out and the case ultimately attain complete recovery.

Dr. H. J. Rock (Sioux Falls): I would like to add this though from my own experience with these cases. Bone does not die en masse, and, I think, that explains very well the overhang to which Dr. Cottam referred.

In attacking osteomyelitis, the attack should be generous and free. The attack ought to continue until you get a very profuse bone hemorrhage,—in other words, until you get behind the foci of infection in the bone.

There in one other point about osteomyelitis that I wish to refer to, and that is systemic infection following an acute osteomyelitis. I have seen several cases of this sytemic infection with osteomyelitis involving the entire body. I would like to have Dr. Stokes give us his explanation of that when he closes the discussion. It is my experience that the soft tissues die en masse, but bone tissue dies in part: and in attacking these bony infections there will be a continuation of the deposit of dead bone, so that it is necessary in treatment to get well in behind, and my best side is where I get a profuse oozing from the Haversian canals in the bone.

Dr. Stokes (closing): With refernce to the treatment of osteomyelitis: LaPorte uses a potassium aluminum silicate mixture. I went to Chicago to see this treatment, and at that time he was not treating cases at the Mercy Hospital. He takes potassium alumium silicate mixture, rolls it up into an oatmeal mush, and makes a paste of it. I talked with him for an hour regarding the treatment of osteomyelitis with this mixture, and I though I would try it. He sent me a small box of this stuff with a bill for $15.00. I have much doubt about the efficacy of it. It is, however, strange to see people by the dozens going to this clinic to have this mixture applied, and, considering the manner in which it is rolled up into a mass, I do not see why it does not infect everything with which it comes in contact.

We all know what the diagnosis of rheumatism has been for generations. I did not go in my paper into the systemic origin of the disease because I did not have time to do so. A curious thing about it is, that most of these tonsillar infections are reported by the nose and throat men. I think most of the tonsillar infections are due to the streptococcus, while most of the infections of bone that have been reported are due to the staphylococus. I do not understand it.

Dr. Riggs' cases are interesting. I would like to ask him if he made bacteriological examinations to determine the nature of the microöganism. Judging from the cases he reported, in all probability it was not a staphylococcic infection, but an infection by the streptococcus hemolyticus. Staphylococcic infection of a small bone is comparatively rare, while streptococcic infection is much more common. The streptococcus is almost never found in the diaphysis of long bones; but in small bones or in flat bones and in the epiphysis of long bones we find streptococcic infection.

Dr. Cottom: Is there any great dinfference in the virulency of the organisms?

Dr. Stokes: There is no doubt of it at all. I tried to make the point clear that the staphylococcus aureus rarely ever infects a joint metasatically during the existence of the epiphysical cartilage between epiphysis and diaphysis.

ORAL FOCAL INFECTION AS RELATED TO GENERAL HEALTH*

By Frederick A. Bricker, D.D.S.
ROCHESTER, MINNESOTA

The condition of the mouth, its maintenance as a good machine properly to masticate food and the menace of mouth-infection about the teeth have a definite bearing upon the general health. The discovery of relationship between ill health and defective teeth is by no means recent. It has received occasional mention in the older literature and has been independently recognized, perhaps for centuries, by practitioners of medicine and dentistry, but it is only within the past decade that it has received the consideration it deserves.[1]

In 1801 an article published by Duke,[2] written by Benjamin Rush before the discovery of

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bacteria and when our knowledge of pathology was meager indeed, reports some remarkable results obtained in cases of rheumatism, dyspepsia, and epilepsy by the extraction of diseased teeth when thereapy had failed. Darwin and others also reported cases with similar results. Carefully observed cases of periostitis, orbital abscess, iritsis, and uveitis that can be definitely ascribed to dental sepsis have been recognized and described. While the exact process of extension from the teeth to the eyes was, in many instances, not known, the improvement of the eye conditions following the extraction of the diseased teeth was considered sufficient evidence that a close relationship existed. That pyorrhea or decayed teeth in the mouths of persons suffering from disorders of the eye do not more frequently appear to have an influence on the cause of the disease has been used as an argument against the causal relationship of dental and ocular affections, but, if we could fully understand the characteristics of the organisms that produce the disease, the change in the virulency of the organisms, and the variations in the strength of the resistance which nature puts up as a barrier to the spread of disease we probably could account more easily for the few metastic infections and arrange a more satisfactory system of prophylaxis.

Organisms from diseaesd teeth may be transmitted to the eyes in three different ways:

First, by direct extension through the bone. In such cases the tooth socket becomes the seat of an infection that destroys the bone of the upper jaw and thus directly affects the orbital walls, producing finally an orbital cellulitis. Such extensions of the disease process about the teeth seldom affect the interior of the eye, but usually the lower, abscesses of the lids, particularly the lower, abscesses of the sinuses, emboli, abscesses of the frontal lobe with atrophy of the optic nerve, and periostitis.

Secondly, by direct extension of the process along the periosteum of the malar bone until it invades the orbit and gives rise to processes similar to those mentioned above.

Thirdly, by transfer of organisms from the focus at the tooth to the eye by the bloodstream. This is the most frequent means of transfer of infection from the teeth and consequently the most important."

Benedict carried on some investigation to determine whether organisms taken from a focus of infection, such as periapical infection of the teeth or tonsillar infections in patients suffering from acute or chronic iritis, have a selective affinity for the iris, and whether the affinity of the organism is greater when taken from an individual during an acute attack of iritis. The experiments were conducted in the Laboratory of Experimental Bacteriology of the Mayo Foundation. The cultures were made, and the animals injected by Rosenow and Miesser. Fourteen patients with iritis were selected as test cases. In order that the patient might definitely be considered a test case it was necessary to eliminate so far as possible by the history, the physical examination, and the laboratory test, other causes of iritis, such as syphilis, gonorrhea, and tuberculosis.

If the culture was to be obtained from an infected tooth, the tooth was removed under aseptic precautions, sterilized by flaming, the root cracked in a vice, and the pulp transferred to blood-agar plates and tall tubes of liquid medium. For the purposes of animal inoculation the tubes of culture medium with the growing organisms were shaken, in order to insure thorough mixing and 2 c.c. of the fluid, containing usually about 4,000,000,000 bacteria, were injected into a vein of the ear of a rabbit.

Culture taken from infected teeth in patients with acute iritis invariably produced the same condition in the animal, and upon removal of the foci in the patient the condition either cleared up or was greatly improved. This was not always the result in the cases of chronic iritis.

I shall not carry through his laboratory experiments, but shall give his summary and conclusions, which are as follows:

"We may, therefore, conclude that iritis is reproduced by bacteria arising from foci of infection around the roots of infected teeth and tonsils, and is carried to the iris by the bloodstream from the foci of infection, and that bacteria have the ability to grow, and do grow, in such environments. As the bacteria around the teeth and tonsils are constantly undergoing changes of environment they suffer a change of function and a change of virulency. There is also a change in the resistance of the body to bacterial invasion so that in the human body a constant warfare is going on between bacteria and the body tissues and fluids."

Continuing, he states that it has been demon-

strated that repeated mild attacks of iritis extending over a period of several years have been due to periapical infection.[4]

Sir Lang (reported by Bell[5]), who has studied the etiology of 200 cases of iritis in his private practice states that 6 per cent were due to syphilis, 11 per cent to tuberculosis, 8.5 per cent to general infections, 25 per cent to various miscelleanous causes, and 37 per cent to pyhorrhea alveolaris.

Bell goes on to say "The intestinal tract is to my mind the most important of all. The first three things to consider in every case of toxemia of this great canal are diet, the condition of the teeth, and the condition of the tonsils. Errors of diet, diseased teeth, pyorrhea alveolaris, and diseased tonsils are the starting points of all cases of hyper- and hypo-acidity and toxemia of the intestinal tract."

In writing on the subject of cancer Dr. F. J. Steadman[6] of England says: "It is my belief that cancer rarely occurs in any part of the body without a more or less long-standing chronic inflammation preceding it, and that a chronic septic condition of the mouth is by far the commonest predisposing cause of cancer."

As a result of an investigation of 44,000 cases of cancer in the male he found that no less than 37,000 cases (85 per cent of the cases examined) occured in the alimentary canal and its associated parts. Of 112,801 cases in both sexes he found that 63 per cent occurred in the alimentary canal, 26 per cent in the sexual organs, and 10 per cent in other parts of the body.

He found as the result of an exammination of the mouths of 204 patients suffering from cancer in the alimentary canal, that 165 were suffering from advanced cases of chronic suppurative periodontitis or pyorrhea alveolaris, 30 from moderate cases, and 8 from mild pyorrhetic conditions, while in only one case was the mouth free from any trace of pyorrhea. He thus found after his long series of investigations that 99.5 per cent of these patients were suffering from periodontal disease. Doctor Steadman says he is convinced that pyhorrhea alveolaries is by far the commonest predisposing cause of cancer of the alimentary tract, and that it also seems proable that pyorrhea alveolaris predisposes to cancer in other parts of the body by starting and keeping up a chronic inflamation upon which malignant changes eventually supervene.

It has been generally considered that such diseases as rheumatic fever, acute and chronic arthritis, myositis, neuritis, iritis, vegetative and ulcerative endocarditis, acute and chronic nephritis, acute and chronic appendicitis, herpes zoster, osteomyelitis, pneumonia, septicemia, gastric and duodenal ulcers, and numerous others, may originate as a metastatic infection from chronic foci of infection, such as pyorrhea alveolaris and alveolar abscesses.

Rosenow has proved by his experimental work that bacteria growing in primacy foci, not localized in specialized tissue, can change their affinities and invade one type of tissue after another. For example, bacteria which have localized in joint structures are less likely to spread to other organs such as the appendix, kidney, gastric mucosa, etc., than organisms localized in non-specialized tissue such as tonsillar crypts, alveolar abscesses, pyorrhea pockets, etc., where they are constantly subjected to varying conditions of oxygen tension and where they may be changed in nature and affinities just as they may be changed by various artificial conditions when given in culture media.

Available statistics show that 78 per cent of persons over twenty years of age have suppurative destructions of portions of the maxillary bones, either along the sides of the roots of the teeth about their apices. The lesions present a definite meance to health and demand the most serious consideration of the dental and medical profession both as to means of eradication and methods of prevention.

A report of fifteen hundred consecutive dental examinations with reference to systemic diseases showed that

Of 302 patients with stomach disorders 90.2 per cent had infected teeth and 83.7 per cent had pyorrhea.

Of 63 patients with duodenal and gastric ulcer 92 per cent had infected teeth and 71.4 per cent had pyorrhea.

Of 195 patients with poor general health 87.6 per cent had infected teeth and 75.3 had pyorrhea.

Of 140 patients with arthritis 87.8 per cent had infected teeth and 77.1 per cent had pyorrhea.

Of 96 patients with myositis 89.5 per cent had infected teeth and 83.3 per cent had pyorrhea.

Of 76 patients with lesions of the heart 88.1 per cent had infected teeth and 82.8 per cent had pyorrhea.

Of 71 patients with kidney disorders 92.9 per cent had infected teeth and 73.3 per cent had pyorrhea.

Of 71 patients with backache 88.7 per cent had infected teeth and 77.4 per cent had pyorrhea.

Of 67 patients with headache 88 per cent had infected teeth and 68.6 per cent had pyorrhea.

Of 50 patients with neuritis 90 per cent had infected teeth and 84 per cent had pyorrhea.

Of 59 patients with gall-bladder disease 92.3 per cent had infected teeth and 76.9 per cent had pyorrhea.

Of 26 patients with goiter 87.5 per cent had infected teeth and 62.5 per cent had pyorrhea.

Of 19 patients with ear trouble 94.7 per cent had infected teeth and 84.2 per cent had pyorrhea.

Of 158 patients with miscellaneous diseases 87.5 per cent had infected teeth and 74.2 had pyorrhea.

Of the total number of patients examined 87.7 per cent had one or more infected teeth and 80.1 per cent had pyorrhea, while only 12.3 per cent had no infected teeth.

It will be noted that there is not a marked difference in the percentage of infected teeth in the different groups of cases. The high percentage was 94.7 per cent in patients with ear trouble, and the low was 87.5 per cent in patients with goiter. About the same variation in the percentage occurs in cases of pyorrhea. The high percentages were 84.2 per cent in patients with ear trouble, 84 per cent in patients with neuritis, and 83.7 per cent in patients with stomach trouble, and the low percentage was 62.5 per cent in goiter patients.[8]

Recent investigations of the lymphatics of the peridontal membrane by Dr. F. B. Noyes have furnished an important link in the pathological changes which take place. Dr. Noyes demonstrated the presence of chains of lymphatics which attached to the sheaths of the blood-vessels in the peridontal membrane; and, since the lymphatics are known to be carriers of infection, it is only necessary to call attention to the fact that the direction of the larger blood-vessels in the peridontal membrance is parallel to the long axis of the root, and that the movement of lymph is from the gingiva toward the apex of the root, to recognize a natural route of travel for infection from periodontal diseases.

I am satisfied with experience that an unhealthy mouth is a fertile and very common cause of disease. The mucous membrane of the mouth is a protective covering just as the skin is the protective covering of the arm. Although infection may be present it may not be forced through this protective membrane unless that tissue is abraded or inflamed, and in periodontal diseases we find this protective covering abraded in a highly suppurative and inflammatory condition, having an area of absorption five to eight times greater than we find in the tonsils. The teeth invariably are movable, with pus pockets extending along the roots. During mastication the tooth acts as a plunger and forces these organisms deeper into the tissues, and enlarges the seat of infection, and the organisms are absorbed by the lymphatics around the roots of the teeth. A portion of this pus drains into the mouth, and this poisonous secretion is continually being swallowed.

I believe that, with proper diet and without bacterial growth upon the teeth and about the mouth, we would not have any decay or periodontal disease, and that, by maintaining a clean and healthy mouth, we can eliminate at least 80 per cent of decay and 85 or 90 per cent of periodontal disease, and reduce oral infection accordingly. Starve the bacteria by keeping the mouth clean and feed the tissues by stimulation (by brushing and maintaining a good circulation). Oral focus infection is not a fad: it is a serious reality. It is a truth problem and one we must solve, and we can, solve it by starting at the seat of trouble, that is, by giving special attention to proper diet and oral hygiene. Not only give special attention to these subjects, but have them taught in our public schools, beginning in the lower grades. If the public school system has for its object the development of mental power in order that the children of today may become the valuable citizens of tomorrow, why should this educational structure be erected, in perhaps as high as 90 per cent of cases, upon a weak body foundation because of diseased teeth, tonsils, mucous membrane, and all the general in fections traceable to this source? I believe that ignorance of oral hygiene and a proper diet are the causes of all decay of the teeth and of periodontal diseases. It is true that drops falling continualy will wear away a stone, but the time has arrived to use a sledge hammer to break through the crust of ignorance which exists relative to proper diet and mouth cleanliness.

Too much stress cannot be laid on a thorough examination of the mouth, which includes radiograms of all the teeth, pulpless and vital, a thorough test for vitality, palpation of the gums, and and a thorough clinical examination for pyorrhea pockets. A radiogram is simply an *aid* to a clinical examiatnion. Oral focal infection is to be eliminated if possible.

A serious systemic condition justifies a radical procedure which would not be advocated in milder conditions; the virulency of the organism and the condition of the patient are the determining factors of procedure.

The problem of oral infection and its relation to disease is now passing through a period that

comes to all newly advanced theories. The answer to this problem will come from time and experience. There is no fixed course of procedure. The only requirements are that the dentist and the physican be well trained in their respective lines of endeavor and conscientious in their efforts, the *future* health of the patient always in view rather than the temporary cosmetic effect.

In conclusion I have three suggestions to make:

First, every physican ought to school himself to recognize pathological conditions of the mouth.

Second, mouth-examination ought to be the first step in diagnosis. Why begin at the heart when the mouth is the logical starting point?

Third, every physican ought to inform his patient of the dangers of septic mouth conditions.

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DISCUSSSION

Dr. H. W. F. Law (Grand Forks): I have very little to say except that I would like to emphasize all the points that Dr. Bricker has made. I do not believe that there is any subject more important at the present time than that of focal infections.

As Dr. Bricker has emphasized, every physician should be qualified at this time to make a diagnosis of the various focal infections. It is surprising how many cases of rheumatism and various other troubles will clear up after defective teeth have been extracted or properly treated. It is probable that many cases of nephritis and hypertension, for which we are unable to find an adequate cause, are the result of certain infections that are present or may have taken place in the past. I think it is our duty as medical men to begin in the mouth when we undertake examination of a patient, for that is the logical place to begin.

Dr. E. L. Tuohy (Duluth, Minn.): I hesitate to discuss this paper because my attitude is quite opposed to the very broad suggestions of the essayist, and I recognize the danger of running counter to current opinion. In certain instances I am willing to grant practically everything the essayist has brought up. In a paper that I read last year before the Minnesota State Association I went into this matter in some detail with a dentist who had wide army experience with Dr. Pemberton, a well-known internist. These data have been published and are known to most of you. I would like very much if the practice of medicine could be reduced to a point where all we would have to do would be to look out for focal infection, and nature would take care of the rest of it.

I regret also that beginning in the mouth is exactly where many patients start now, often going right over the physician's head, consulting his dentist and having his teeth extracted or some work done for pyorrhea. My contention is that we should find out all we can about a patient first, then come back to the teeth and to focal infection. By so doing we shall not be overlooking a lot of tabetics, people with aortic aneurisms with chest pain, a lot of neurotics and those in whom bad tooth conditions are the result of advanced age. Thus narrowing the proposition down, there will be a lessening of the ultimate percentage of people upon whom you cannot do too much in the matter of searching the teeth, the alveoli, and associated sinuses. But this sort of information going out to the public and to the physician who is never too anxious to delve deeply into the processes back of disease, gives the impression that all he has to do is to look out for diseased teeth and focal infection. The essayist works in connection with a well-balanced clinic; he sees the patients often; they have been carefully differentiated; the average pyorrhea specialist exodontist does not.

Dr. Bricker (closing): I agree with Dr. Tuohy that, no doubt, many teeth are unnecessarily extracted; but, as brought out in my paper, we should make a thorough examination of the mouth. Now, a thorough examination of the mouth is just as much a problem as the making of a thorough examination of any other part of the body. Experience has shown that too many physicians are sending their patients to the dentist and saying, "Extract all these teeth," before they even give a general examination. We believe that the mouth is the logical starting point for a diagnosis. Clean up the mouth first; make your physical examination, not necessarily extract all devitalized teeth by any means, but clear up the mouth so we can eliminate as far as possible all questionable conditions. Those who are abreast of the times are not extracting all devitalized teeth, but are extracting those teeth that show definite granulomata, but not those that appear negative on the *x*-ray plate. The trouble today is that too many men, physicians included, are making mouth-examinations from the *x*-ray, whereas the *x*-ray is simply an aid. We must make a thorough clinical examination of the mouth; but I still maintain that eliminating infection from the mouth, which is the portal of entry of all that sustains life, is the first step to be taken in the making of a thorough diagnosis.

NEGATIVE PRESSURE IN EMPYEMA*

By N. O. Ramstad, M. D.
BISMARCK, NORTH DAKOTA

The treatment of empyema has always been a difficult problem. The influenza epidemic with its many pulmonary complications caused renewed interest to be taken in the treatment of respiratory diseases. The empyemas which followed influenza differed from those of previous years in their greater toxemia and difficulty of cure. The presence of many unhealed cases in almost every community has shown the need for better understanding of this condition.

The treatment of empyema should be an individual one applied only after careful study and examination of the patient. Few conditions require such careful coöperation between the internist, röntgenologist, laboratory worker, and surgeon as is necessary in the treatment of these cases. It has been claimed that chronic empyema is the result of the faulty treatment of the acute form, and there may be more truth in this statement than we are willing to admit.

Physiologists inform us that there is in the pleural cavity a pressure of from 4 to 7 mm. of mercury less than in the bronchi of the lungs. This difference is due principally to the pressure of the elastic lung on the air contained within it, and the lung is in close contact with the chest wall only as long as the pleura remains closed. As soon as the pleura is opened, air rushes in, and the lung contracts unless it is held fast by adhesions. The amount of lung collapse depends on the size of the opening, as well as on the vital capacity of the lungs. A person who has a large or a normal capacity can withstand a larger opening than one who has a small vital capacity or has had this capacity lowered by pneumonia.

The mediastinum is quite movable normally, and offers but slight resistance to air pressure, so that if one pleural cavity be opened the pressure on the other side of the chest falls until the pressure in the two sides is practically equal. This is not the case, however, when inflammation and adhesions are present, as these interfere with the free mobility of the mediastinum.

In the modern treatment of empyema there are three principles which must be complied with in order to obtain good results. The infected fluid in the pleura must be withdrawn, the pleural cavity must be sterilized, and the space between the lung and the chest wall must be obliterated.

Aspiration alone will seldom result in a cure, even though frequently and carefully performed. Thoracotomy or incision and drainage of the pleura is the most common present-day method of treatment. If the patient is very weak, toxic, or cyanotic, it is advisable to withdraw the infected fluid by repeated aspirations until his condition has so improved that a thoracotomy under local anesthesia can be safely borne. The thoracotomy allows the pus to be drained away, but the opening of the pleura causes collapse of the lung and the formation of a large cavity between it and the chest wall unless strong adhesions are present. The space is usually slowly obliterated by the formation of granulations, by the thickening of the pleura, by partial contracture of the chest wall and by the slow expansion of the lung. The pleura covering the contracted lung becomes thickened and fibrous, and often prevents the proper expansion of the lung.

These cases require frequent dressings for weeks and months, and many become chronic, requiring serious operations on the chest wall or on the thickening pleura. The obliteration of this empyema cavity has been accomplished in the past principally by two methods. The well-known operation of Schede, Estlander, and others, consisting of multiple rib resections and collapse of the chest wall have been successful in many cases in obliterating the cavity, but often at the expense of the function of the lung on the affected side. Later a French surgeon, Delorme, advocated removal of the contracted thickened pleura which compressed the lung. This operation was later performed by Fowler of New York, and has been improved by Ransohoff and others.

The above methods are important additions to thoracic surgery, but the resulting mortality is high and the recurrences are frequent.

During the great war the Carrell-Dakin method of treating infected wounds was discovered, and soon became accepted as a valuable aid in the sterilizing of empyema cavities. In spite of its use there remained many unhealed

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cases. The problem of how to obliterate the cavity resulting from the collapse of the lung had to be solved in some other way.

An improvement on the open thoracotomy method is the so-called syphon treatment in which a tube is inserted into the pleura and the wound is closed tightly around it. This tube is connected with a longer tube, which leads into a bottle of fluid placed under the bed. A stronger negative pressure is obtained by attaching two water bottles, which are arranged so that the air is partly exhausted by the weight of the water as it runs out of one of the bottles. The advantages of this simple apparatus are many, but it was found, that it was almost impossible to prevent leakage, as the tissues about the tube retracted in a few days and allowed air to enter the pleura, so that the benefit of this method was lost. The method was not effective in the presence of thick pus or fibrin in the pleural cavity.

It seemed to us that the problem to be solved was to find a method by which the pleural cavity could be effectively drained, sterilized by irrigation with an antiseptic solution, and at the same time to continuously maintain a physiological negative pressure in the affected side in order to prevent lung collapse with all its attendant evils

A few suggestions were made to our associate, Dr. A. E. Brix, who gradually developed an apparatus which we believe will be of considerable help in the treatment of empyema. The apparatus consists of an ingenious rubber belt holding a drainage tube and a Dakin tube tightly, and an electrically driven vacuum pump controlled by a manometer.

By means of the apparatus after a thoracotomy has been performed, it is possible to maintain a constant negative presure of definite amount in the pleura. It automatically removes the pus and keeps the lung distended, and, in addition, it allows the free use of Dakin or other antiseptic solution in the pleura, without removal of the apparatus.

The use of Dakin solution has been found useful, as it not only sterilizes the empyema cavity, but liquifies the thick pus and dissolves clots and fibrin, which frequently interfere with tube drainage.

The lung is gradually expanded by the negative pressure, and the patient does not suffer as much from dyspnea or congestion of the other lung, as with the open thoracotomy method. The patients are not troubled with disagreeable pus-soaked dressings, as the pus is automatically drawn into a bottle by the negative pressure.

We believe that it is possible in this manner to treat a double empyema with less danger than with the open methods.

Our experience with this method causes us to claim the following advantages for it: The patient will be more comfortable; his recovery will be hastened; the evils of lung collapse and the lowered pressure in the other lung will be done away with; it will prevent the formation of a large cavity between the ribs and the lung; and the number of cases which will become chronic and require secondary operations will be lessened.

The apparatus is somewhat complicated, but it has not been especially difficult to keep in order. As these principles of treatment become better recognized, a more simple technic and apparatus will undoubtedly be developed.

The negative pressure has been very valuable in the treatment of unhealed chronic cases which has been operated upon and treated by the open methods. In conjunction with Dakin solution it has cleared up some of these cases in a short time.

DISCUSSION

Dr. B. A. Bobb (Mitchell): I have enjoyed the paper of Dr. Ramstad very much, and particularly the scientific method he has presented of handling these cases. I have had many cases of empyema to deal with; and the trouble with all of us I think is that we do not know the ultimate results. We do not take a picture for control purposes, as the doctor has done, to find out whether the lung has fully expanded or not. My theory has always been in empyema that if you establish drainage down low enough, so that the cavity will drain and keep the patient in the upright position you will get good results. I have not taken the trouble to take a picture afterward to find out whether the lung had fully expanded or not.

I have had five or six cases in which I resorted to thoracotomy, resecting the fifth or six rib, using drainage low enough down to the diaphragm, and even going in still further and sewing the tube in tightly. If I should happen to have a case in which the pus was situated low down, and I opened two inches higher than the diaphragm, I would make a separate opening and sew each opening up under local anesthesia, and sew tight around my tube to hold it there, and then fasten on the finger of a rubber glove for drainage.

The doctor said he has had no moisture around the patient. If the tissues are sewed up tightly around the tube and fastened on with the finger of a rubber glove, or the tip cut off and tied tightly around the tube, with forceps put on the rest, and the nurse allowed to drain that out as often as it fills up, good results will be obtained. Has this lung expanded?

Will that patient be as well off in seven years and not get tuberculosis or some complication, a question I cannot answer because I have not followed these

cases up. Two of my patients died suddenly a few days afterwards, the cause of which I do not konw. We were unable to get a post-mortem examination in either case. If I had made use of Dr. Ramstad's method, I might have prevented these deaths.

Dr. T. F. Riggs (Pierre): I think we must all appreciate the remarkable piece of work that we have just heard described. All of us have heard much about empyema in the last few years and have seen many cases, and each one of us has had difficulties in handling these cases, but very few of us have heard anywhere a more scientific and beautiful description than we have heard from Dr. Ramstad. Very few have had the opportunity of seeing such a group of illustrations following and checking up the findings in a series of cases.

The belt which Dr. Ramstad has shown us seems to fill a long-felt want. I would like to know where we can get these belts and how much they cost.

I would like to know how long he has kept negative pressure on; also, what is the amount of pressure he uses, and does he have any complications from the use of this pressure.

Dr. W. A. Maytum (Alexandria): Concerning the last picture of the case Dr. Ramstad showed: I would like to ask him how long he has used this method and the time it occurred

Dr. Ramstad (closing): There are many small technical problems to be considered in the treatment of such a complicated disease as empyema, which is due to various kinds of infection and affects people differently. We do not believe there is any one mechanical method which will take the place of careful. intelligent, systematic care, and observation, which are so essential in the treatment of these cases.

In regard to the treatment by negative pressure: It must be controlled carefully. In a child we usually use a presure of about two millimeters, sometimes three or four. In an adult, if the patient's condition is fairly good, we usually begin with ten millimeters of negative pressure. If a patient is very toxic and very ill, we are careful not to have too much negative pressure. It is better to begin with five millimeters and increase to ten, and in a few days, when adhesions have begun to form, the negative pressure can be increased to fifteen or twenty millimeters. If you have too high a negative pressure you do harm. You cause passive congestion, and you will find blood in the fluid which is washed out by your Dakin solution or which is drawn into the bottle. The more toxic the patient, the more gentle the negative pressure should be.

OSTEOMYELITIS*

By F. W. Minty, M. D., F. A. C. S.
RAPID CITY, SOUTH DAKOTA

In treating a subject of this magnitude befor an association of men whose work is all or largely surgical in nature, it would be a mere waste of time to cover in detail all of the various factors entering into its consideration. We shall, therefore, endeavor, in as brief a manner as possible, to sum up the salient points bearing upon this disease as gathered from a rather careful resumé of current literature rather than from any wide personal experience with acute and chronic bone-infection.

Broadly speaking, the subject of acute osteomyelitis might be well divided into, first, those cases of acute infection of childhood and adolescence which are probably almost always the result of a pre-existing focus of infection and, second, those cases resulting from compound fractures or injuries of bony tissue as abundantly exemplified by the thousands of cases of bone-infection during the recent World War. The scope of this paper will include the discussion of the first class of cases rather than attempt to cover the entire field.

*Presented before the South Dakota Section of the American College of Surgeons, at Aberdeen, June 28, 1921.

Acute infective osteomyelitis, as considered under this limited classification, presents, first of all, a very interesting age incidence as worked out by Trendel, in 1904, which shows a constantly increasing percentage from the first year of life to the seventeenth, with a very rapid drop in age incidence to the twenty-sixth year, when ossification is practically complete, after which time the typical osteomyelitis under this classification is practically an unknown condition. Many theories have been advanced in the past regarding this matter of age incidence until at the present time there is probably no question but that the three great factors bearing upon this characteristic are, first, the histologic arrangement of the bony frame work and blood supply of the long bones during their developmental period; second, a pre-existing primary focus of infection; and, third, some slight trauma or other factor causing a local stagnation of infected blood in the blood spaces of the bony frame-work.

I. *Histological Element.*—The researches of Lexer[1] clearly demonstrated that the blood vessels supplying the bony tissue, whether the

nutrient arteries or the periosteal blood vessels, are all terminal vessels, the arborization of which is such as to make the blood-stream through the medullary portion a very sluggish one and, primarily, an excellent place for the cultivation of bacteria upon even slight interference with its normality.

The later work of Ochsner and Crile[3] emphasizes this point in the following very clear paragraph.

> Arterial blood enters a bone through two routes, the most evident route being via a nutrient artery which, after it reaches the medulla, sends blood both up and down the bone, rapidly dividing into an arborization, the branches of which are short, emptying quickly into comparatively large venous spaces. The other route of arterial blood is via the periosteal vessels, the arborization having already occurred in the periosteum—when following this route the arteries are lost track of immediately and capillary vessels conduct the blood through the haversian canals in which it may be said to become venous at once. It seems that this periosteal blood penetrates a very little distance into the bone, compared to the distance that the medullary nutrient supply does. One can readily see how this comes about when one remembers that the haversian canals have their smallest diameter near the circumference of the bone. The blood issuing from the cut surface of live bone always exhibits the characteristics of venous flow, except when the nutrient artery itself is cut. For these reasons arterial blood, on entering the proper bony circulatory system, loses much of its impulse and becomes static. One may compare the entrance of blood into a bone with that of the entrance of a stream of water into a tank.

With the development of ossification in advancing age, the vascular supply to the bones appears to diminish with a corresponding lessening in size of the haversian spaces which fact undoubtedly has an important relation to the practical absence of this form of osteomyelitis during adult life.

II. *Pre-existing Primary Focus.*—The second etiological factor in acute osteomyelitis, that of a pre-existing primary focus of infection, is of course a more recent element in the consideration of this condition. In a standard work on surgery[4], published as recently as 1907, it is interesting to note that the author states that "The subjects of the disease are usually of a more or less feeble constitution. Not infrequently they are of strumous diathesis and very often are children who have been depressed by antecedent febrile diseases, such as measles, scarlet fever, whooping-cough, bronchitis, and typhoid fever." In the light of present-day knowledge concerning focal infection, with its attendant pollution of the blood, it is easy to translate the above statement, based upon clinical experience, into terms of modern findings of children with chronic infected tonsils, accessory nasal sinus infections, etc., thus accounting for the feeble constitution, which so often preceded an attack of acute osteomyelitis.

At this point we suggest that there may be a close clinical relation between the fact that the most common microörganism found in acute osteomyelitis is the staphylococcus, and the fact that the most prevalent microörganism in the chronic infected tonsils of children is also a staphylococcus, thus possibly indicating a much more prominent etiological correlation between the acute osteomyelitis and the age of childhood, as compared to the infrequency of acute osteomyelitis in the adult, at which age the secondary manifestation from primary focal infection appears to be more frequently infections involving the abdominal viscera than bony tissue, which visceral infections appear to be largely the result of modified strains of bacteria from the original focus of a selective type as suggested by Rosenow.

However, in view of the fact that the staphyococcus in all of its strains, the typhoid bacillus, the pneumococcus, the colon bacillus, Klebs-Loeffler bacillus, and others have all been found in this disease, it is quite evident that acute osteomyelitis is not entirely dependent upon the above theory, or, at least, our present knowledge of focal infection in children will not warrant a positive conclusion in this respect. Extended research along the line of this suggestion might, however, result in some startling conclusions regarding the interrelation of infected tonsils, etc., and acute osteomyelitis in children.

III. *Local Stagnantion of Infected Blood.*—It has long been a well understood clinical fact that acute osteomyelitis is more frequently the result of a slight or moderate trauma than of more severe injuries, and the effect of extreme exposure to cold causing a sudden or prolonged chilling of the body has also been one of the unexplained etiological factors. In the light of the theory that we are advancing regarding the etiology, it seems reasonable to assume that, given the histology of the vascular and bony conditions of childhood in the presence of a blood-stream carrying pyogenic cocci from a pre-existing enfected tonsil or sinus, any slight trauma or other condition causing an abnormal congestion with an increase in the normal stasis of the blood stream in the medulla or cortex of a bone should

give us exactly that which clinical experience has taught us rapidly supervenes in that terrifically infective, rapidly destructive condition which we term acute osteomyelitis.

TREATMENT

The development of the science of surgery has resulted in a rather gradual approach to that position where large acccumulations of pus or marked destruction of tissue are recognized as a sign of either poor diagnosis or improper treatment. The day when the surgeon points with pride to a large appendiceal abscess or a perforating purulent mastoiditis is past and we believe that in this category should be placed acute osteomyelitis, for, while the patient's life may be saved late in the disease, procrastination in the matter of radical treatment always results in unnecessary destruction of bone tissue and greatly increases the hazard of diffuse pyemia with all its attendent catastrophe. As in the case of acute intestinal obstruction, the *x*-ray is of no value in the diagnosis of this condition during the stage that offers the best opportunity for treatment, and, if these patients are to be handled at the best advantage, the condition must be recognized and treated before any marked degree of bone-destruction has taken place. As in acute intestinal obstruction, he who waits for sufficient symtomatology to make an absolute diagnosis, is sacrificing the best interests of his patient by his hesitancy.

Briefly stated, the cardinal symptoms of acute osteomyelitis are extreme bone pain, closely preceded or followed by a chill, and a sudden hyperpyrexia. Early in the disease (a matter of a few hours after the onset) one can usually exclude joint pain, and sharp percussion or tapping over the affected bone shows very marked tenderness Within a few hours or days after marked destructive processes have taken place, there is usually presented marked inflammation of the surrounding tissues even extending into the neighboring joint, and all of the symptoms of a combined osteitis, periosteitis, and soft tissue inflammation, but this condition is very much the equivalent, from the standpoint of diagnostic pride, of a large appendiceal abscess pointing through the abdominal wall. Bearing in mind that in the vast majority of cases[5] the disease in its earliest stages is largely, if not solely, confined to the red marrow and periosteum in the immediate neighborhood of the shaft side of the epiphyseal cartilage, one can readily see the necessity of early diagnosis if joint involvement is to be excluded in our findings. This point should also be constantly born in mind in the early treatment of the condition by looking in this locality for the early manifestations of infection if the disease is to be arrested before there is marked destruction of the bone medulla.

Unfortunately, however, it is quite probable that many of these cases will be seen primarily by the general practitioner, and the unfortunate patients treated for rheumatism, growing pains, etc., until the best time for surgical treatment is past before the surgeon is consulted. In other words, the general profession is at about the same place to-day in the recognition of acute osteomyelitis that they were twenty-five years ago in the recognition of acute appendicitis, and it is only by an active propaganda of education upon the part of the general surgeon that we can hope to have these cases receive surgical treatment at the most advantageous stage.

The only treatment of acute osteomyelitis is properly placed drainage of the infected area. If the case is seen after marked destruction of the medulla has taken place only very wide dissection and free opening of the entire shaft will suffice to control the infection. Just at this point there is still some slight argument as to the proper method of procedure, but at least two rules are very definitely determined: first, that the entire shaft should be opened widely, and second, that the cavity should not be curetted as was often times formerly done.[6] From this point on various methods of procedure are advocated, varying from applying phenol from two to five minutes or constant irrigation with Dakin solution to treatment by heliotherapy without application of any dressings or solution, and the fact that favorable results are obtained by all of these methods is suggestive that the after-treatment is of very small importance as compared to the matter of early complete drainage. At this point it might be well to call attention to a statement of LeConte [7]: "It is never expedient to incise the periosteum only, but in all cases of periostitis in the adolescent it is wise to expose the medulla either by a trephine or chisel." That part of the treatment of osteomyelitis which includes the removal of the shaft with subsequent autogenous bone transplants, or the technic of Nichollas of removing the shaft and folding over the periosteal wall, or the treatment of sequestra and bone sinuses, has to do with that part of the subject which is not included in this brief article.

CONCLUSION

In conclusion we would sum up the subject as a condition that has come to be recognized as one in which the best results and highest responsibility of surgery depend upon an early recognition, a frank understanding of the three main etiological factors, and a bold attack upon the infective process in anticipation of rapid progress of a very grave condition in which timidity with procrastination is a definite surgical sin.

1. Trendel; Beiträge zur Klin, Chirurgie, Vol. xli, p. 607.
2. American Practice Surgery, Vol. iii, p. 290.
3. Osteomyelitis, Ochsner & Crile; S. G. & Obst., Sept. 1920, p. 265.
4. American Pract. of Surgery, Vol. iii, p. 270.
5. Geo. A. Peters, Toronto; American Pract. of Surgery, Vol. iii.
6. Warbasse; Keens Surgery, Vol. v; p. 734.
7. Acute Inflammation of Long Bones, Bost. M. & S. J., 1911, June 1.

MISCELLANY

DRUGGIST, BAR-TENDER AND SERVANT PHYSICAN

The Blue Earth County Medical Society rises to defend the Medical profession against an insult seen in a recent ruling of the Secretary of the United States Treasury in the matter of prescribing beer and wine. The following resolutions were passed at the last meeting, held at Mankato on October 31:

The medical profession is confronted with a problem that must lead to honor or dishonor as a sequel to the recent ruling of A. W. Mellon, Secretary of the United States Treasury. By this ruling a physician may prescribe two and one-half gallons of beer or two quarts of wine as a medicine, and there is no limit as to how frequently he may give this prescription to the same patient. The ruling further provides that these beverages shall be sold by the druggist, delegating to him the right to determine whether or not the patient who holds a prescription for either one or both of these beverages is in need of the same for medical purposes. This is a veritable paradox.

By this ruling the druggist is made the bar tender and the physician the servant of the inebriate, the wine bibber and the beer drinker: Therefore—Resolved, by the Blue Earth County Medical Society in regular session assembled, first, that the medical profession does not recognize wine and beer as medicine; but, if in particular cases it be so recognized by some physicians, the present power delegated to physicians to prescribe for medicinal purposes not to exceed a pint of liquor in ten days to any one person, is surely sufficient in the interests of the sick.

Second, that we recognize in beer a certain amount of nutrition which exists in the malt and the sugar, but not in the alcoholic content. That we regret and deprecate the late ruling of the U. S. Treasury Department which will operate as a flagrant technical violation of a portion of the constitution of the United States, and create a greater disrespect for law and order.

Third, that we express the hope that the medical profession in general and the members of the Blue Earth County Medical Society in particular, will ignore the ruling of the Secretary of the Treasury and refuse, to the everlasting honor and credit of the profession, to use the powers thus delegated to the members of our profession by the aforesaid ruling.

Fourth, that a copy of these resolutions be spread upon our minutes; that a copy be sent to each of our Minnesota medical journals, and to each of the following: President of the United States, Secretary of the Treasury, Senator Knute Nelson, Senator Frank Kellogg, and Representative Frank Clague and that a copy be given to the Mankato Free Press for publication.

These resolutions were unanimously adopted by the Blue Earth County Medical Society, Mankato, Minn., Oct. 31, 1921.

ALL THAT IS KNOWN ABOUT DIET

In his "A Layman's Handbook of Medicine," Richard C. Cabot makes the following comments on books about diet:

Almost nothing is known about diet. There are numerous weighty books on the subject which are useful for pressing leaves, but not for much that they contain. All that is really known about diet can be contained in a very small book, and one of the most encouraging signs of the times is that books on diet are getting smaller. The man who probably knows as much about it as anybody in the United States is Dr. Graham Lusk. He has published a book of fifty-one pages, which contains almost all the known wisdom on the subject—a most refreshing contrast to the old wives' tales that are so numerous and so dull in long books on this subject. Everything in it is true, and there is nothing in it that is not true. I do not know of any other book about diet of which that can be said.

The book Mr. Cabot refers to is Graham Lusk's "The Fundamental Basis of Nutrition."

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AN HISTORICAL MEETING WITH HISTORY, PRINT, AND BOOK

The Hennepin County Medical Society held one of the most important meetings in its history on the night of November seventh, and it should be of interest to all of our readers, whether within or without the city.

We who are members of the Society feel that it is one of the greatest societies in the Northwest. It has been in existence since 1855, and each year it makes progress, improves its programs, and is calling out more members than ever before. This is due mainly to the program committee, which consists largely of the president, the secretary, and executive committee. And to the President, Dr. George D. Head, THE JOURNAL-LANCET extends its congratulations as this year's presiding officer, and compliments him on the thoroughness and accuracy of his decisions and his adroitness in presiding over a crowded house with a full program.

One of the several points of interest in Monday night's meeting was the historical paper read by Dr. H. L. Staples on Sir Joseph Lister. In the recital of Sir Lister's life Dr. Staples brought in men who were more or less closely associated with him in his efforts to enlarge the field of medicine and to abolish the old-time ideas of the untidy and unclean surgeon and obstetrician. (This paper will be published in a later issue, and it is well worthy of careful consideration.) Following the reading of his paper, Dr. Staples presented the Society with a framed engraving of Sir Joseph Lister, which he secured, after many efforts, through a dealer in London, who said the prints were exceedingly rare.

Of special interest to the Society was the preparation and presentation of a historical volume of the Society by Dr. A. E. Benjamin, who has been chairman of a committee for the preperation of this volume, and which has for the past four years been gathering data relative on the early work of the Society, the officers who conducted the Society meetings, a list of men who served in the late war, and a long list of members who have died or moved away, and a greater list of members who are still in active contact with the Hennepin County Society. Their number is now 446, and the attendance at each meeting shows the interest of this large membership. The volume contains also the constitution and by-laws. The name of each member of the Society is recorded, printed in small type, over which the member is expected to put his autograph. This was done with impressive ceremonies at this meeting, and it gave the older members of the medical profession an opportunity to sign first. Dr. H. H. Kimball is probably the oldest living member of the Society. Next to him in length of membership are Dr. R. J. Hill, Dr. A. W. Abbott, Dr. H. L. Staples, Dr. A. J. Murdock, and a few others.

This book is a large volume about 18 inches in length, and is bound in heavy morocco, beautifully tooled. Its pages are of Japan vellum, and each page has a design in which the printed matter is contained. It begins with the history of the early efforts of physicians in Minneapolis to form a society, and it shows, in historic sequence, the results of the labors of these men. The society has grown steadily with occasional slipping, but now is on a firm and substantial basis both as to numbers and finances. This book was prepared at great cost, the printing, designing and binding costing approximately $760.00, and it was presented by Dr. A. E. Benjamin to the Society as his own personal gift. This, of course, does not take into account the aid he received from his co-workers, his stenographers, and other laborers, nor the work that he put on it himself. As a tribute to his generosity, the President and Secretary were directed to outline a letter of thanks, a copy of which is to be bound into the book itself,—a generous gift by a medical man who has long

had the interest of Hennepin County Medical Society at heart.

Following the presentation of these permanent additions to the history of the Society, came the medical program. The first paper was by Dr. A. W. Abbott on the "Ethics of the Medical Profession Forty Years Ago," contrasting it with the present-day methods. Dr. Abbott hesitated about having this paper published, but all who heard it felt that it was a paper of great value because it contained the philosophical reasoning and expression of a man of wide and extended experience. Those who know Dr. Abbott will appreciate how much he is beloved by the profession all over the state, and anything he may say on the subject of ethics will be taken in the same spirit in which he presents it.

Following Dr. Abbott on the program, Dr. Moses Barron read a paper on "The Etiology and Clinical Significance of Hypertension, with Report of a Case of Cerebral Apoplexy in a Girl Thirteen Years Old." This paper gave a clean cut résumé of what is known on hypertension. The author explained many of the old theories in which hypertension was considered, and dismantled most of them. His paper will also be printed later, and will be found to contain the very latest information on this subject, and will help many a practitioner to overcome his fear of suspicion of the outcome of high blood-pressure.

Dr. Theodore Sweetser read a paper on "Diagnosis and Treatment of Bone Tumors," in which he used many lantern-slides to illustrate the many varieties, and to explain the method of treatment and the results of such treatment.

THE MEDICAL SCHOOL OF THE UNIVERSITY OF MINNESOTA—ITS TROUBLES

THE JOURNAL-LANCET is requested by the Administrative Board of the Medical School of the University of Minnesota to publish a resolution passed by the Board on November 2, 1921. It is as follows:

That after consideration of the report of the Committee on Survey of the Medical School, the Administrative Board unanimously voted its approval of the administration of Dean E. P. Lyon.

If the Administrative Board of the Medical School is desirous of having its views compared with the views of the Survey Committee, which was invited by the Board of Regents to investigate conditions at the School, and whose report was adopted by the Regents "as the general policy it would follow hereafter in the conduct of the Medical School"—we say, further, if the Administrative Board desires to combat that policy and asks the publication of its resolution, with the presumable purpose of influencing the views of the medical profession, then all the facts should be considered together. We shall state some of the pertinent facts:

1. Owing to the serious dissensions in the Faculty of the School and to equally serious criticisims of the School by its medical alumni, the Regents appointed a Survey Committee, which was composed of three distinguished medical men. In that report will be found the following statements (p. 503 of THE JOURNAL-LANCET of Sept. 15, 1921):

The committee is decidedly of the opinion that the dean of a medical school should be selected and nominated by the medical faculty. The Board of Regents that fails to recognize this important fact is, in the opinion of your Committee, ignorant of human psychology. Men who are competent to be members of a medical faculty are willing to follow a leader selected by themselves, but do most strenuously object to serving a master appointed over them by someone else. A medical faculty that can not select its own dean is already impregnated with the seeds of dissolution.

2. The Administrative Board of the School is composed of 14 members.

3. The Faculty of the School is composed of 240 members.

SOME OBSERVATIONS

1. The resolution of the Administrative Board will do Dean Lyon more harm than anything his enemies, if he has any, can do him.

2. The Administrative Board can submit to the Faculty the whole question, including the opinion as "to seeds of dissolution"; and every member of the Faculty, we are confident, will cheerfully abide by the result of a secret ballot.

Until the medical alumni of the School and other members of the medical profession of the state give hearty support to the School, its work will be so threatened as to impair its future usefulness.

THE JOURNAL-LANCET pledges its hearty indorsement of every sane measure, arising from whatever source, to restore harmony within the School and between the School and the medical profession.

THE VAGARIES OF THE TYPES

Everybody connected with the publication of a professional or technical journal, from the editor down (or up?) experiences a momentary

elation when an issue is off the press, which occurs twenty-four times a year in this office, and this means no small number of elations. We said momentary, and we said it because the first glance at each "last" issue is almost sure to reveal a hideous, or otherwise, vagary of the types, a so-called typographical error.

Many of these vagaries occur in THE JOURNAL LANCET, especially during a printers' strike, but they are not often amusing to us. We get our fun when the other fellow falls down—that is human nature, the stuff out of which humor is born.

These observations and painful recollections are suggested by an item in our daily papers of recent date when they printed the names of eight or ten medical experts who were equally divided in a damage suit growing out of a broken limb. The experts were divided as to what an *x*-ray picture of the limb showed. In the list in each of our three daily papers appeared the name of "Dr. K. Idea." Probably every reader of the papers asked, "Who is Dr. K. Idea?"

Only an expert (ye editor) can answer that question. He is the genial and efficient pathologist of the Minneapolis General Hospital, known as Dr. Kano Ikeda, who came to this country from Japan a few years ago, graduated at Rush in 1911, thence to Minneapolis, soon to take and maintain a high rank in the medical profession. He has ideas, too; therefore the newspapers did not miss the mark widely.

This, of course, reminds us of another vagary of the types, one that occurred in the printing office that prints THE JOURNAL-LANCET The comical slip appeared in an editorial in a religious journal. The editor attempted to end a lugubrious dissertation with the commonplace but harrowing statement that "All must die." The last two letters of "must" got transposed, and an angel was made to say, "All muts die," which is also a typographical "idea."

BOOK NOTICES

TRAUMATIC SURGERY. By John J. Moorhead, B. S., M. D., F. A. C. S. Second edition, 1921. Philadelphia: W. B. Saunders Company.

This is a volume of over eight hundred pages and contains over six hundred illustrations.

The author has very thoroughly covered the usual effects of accident and injury and has included a great deal of minor surgery. The descriptions are brief and in most instances complete. The illustrations, though diagrammatic, are very clear and helpful.

The author has had considerable experience in military surgery and has included many valuable points gained thereby.

The book should be a valuable addition to the library of any one called upon to do traumatic surgery.

R. C. WEBB, M. D.

A TEXT BOOK OF PATHOLOGY. By Alfred Stengel, M. D., Sc. D., Professor of Medicine, University of Pennsylvania, and Herbert Fox, M. D., Director of the Pepper Laboratory of Clinical Medicine, University of Pennsylvania. Seventh edition, pages 1111. Price $8.50. Philadelphia: W. B. Saunders Company, 1921.

The present edition of this work is the result of an attempt to bring the subject of pathology up to date in the light of recent advances in knowledge. New material has been added to every chapter. Additions dealing with influenza and nephritis are particularly noteworthy.

The subject matter, in general, is taken up in an orderly sequence, giving the essentials of the cause and effect of disease processes which are so essential in the understanding of the production of symptoms.

Theories and various interpretations are recorded, but controversies which tend to lead the student into a misty understanding, have been avoided. The purpose of the book seems to be, primarily, to teach the fundamentals of pathology without undue detail. It fills a distinct place as a guide for students and physicians who are interested in laying the foundation in pathology.

FLOYD GRAVE, M. D.

FRACTURES IN GENERAL, INDUSTRIAL, AND MILITARY PRACTICE. By John B. Roberts, Emeritus Professor of Surgery in the University of Pennsylvania, and James A. Kelly, Assistant Professor of Surgery in the University of Pennsylvania Graduate School of Medicine. Second edition, entirely reset; pp. 755. 1921. Philadelphia: J. B. Lippincott Company.

This volume is an excellent review of the treatment of fractures. It describes not only the older methods but most of the newer ones developed by the extensive lessons gained during the war.

A large amount of space is given to the technique, with illustrations of the general principles of treatment of fractures and of specific fractures. The authors describe the use of calipers and the Steinmann pin, and also go into lengthy discussion on the operative treatment of fractures. Their conservatism here is to be recommended.

Under "Fractures of the Cranium," the reviewer feels that the author should have taken cognizance of the recent work of Sharpe.

The modern treatment with débridement is referred to in compound fractures.

This work should serve as a valuable addition to the library of any surgeon, and especially to those who are concerned in the treatment of industrial cases.

STANLEY R. MAXEINER, M. D.

MOTHER AND CHILD. By Edward P. Davis, Professor of Obstetrics in Jefferson Medical College. Fourth edition, revised. Philadelphia: The J. B. Lippincott Company, 1921.

The introduction states very well the scope of the book.

The manner is positive, and this helps in the author's effort to overcome the numerous rumors which bear upon obstetrics and pediatrics.

The author is correct when he points out that pregnancy is a condition, not a disease. In his directions to the pregnant mother he forgets to caution against tub-baths during the last month.

Dr. Davis neglects to comment more than barely upon the importance of focal infection during pregnancy, but he does emphasize a frequently overlooked fact of great importance, namely, that the parents are responsible for the habits and environment of their offspring.

In advising a two-hour feeding for new-born babies he carries into a modern book a relic of antiquity, which is offensive to the medical men of the West.

The curd of vomited milk is soft and white if recently taken and regurgitated, but firm and tenacious if it has begun fermentation in the stomach. For too rapid nursing he recommends taking the child away, and then compressing the nipple, and allowing the child to begin again with only a little milk flowing at a time.

He condemns the irrational way parents have of punishing children at meal-time and upsetting their digestion.

Dr. Davis is to be commended for his broad point of view on all questions dealt with in the book. It contains a large amount of useful information for the laity or general practitioners.

J. Warren Bell, M. D.

Essays on Surgical Subjects. By Sir Berkeley Moynihan, K. C. M. G., C. B., Leeds, England. Octavo 253 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1921. Cloth, $5.00 net.

The book contains the following essays: "The Murphy Memorial Oration;" "The Ritual of a Surgical Operation;" "The Diagnosis and Treatment of Chronic Gastric Ulcer;" "Disappointments after Gastro-Enterostomy;" "Intestinal Stasis;" "Acute Emergencies of Abdoninal Disease;" "The Gifts of Surgery to Medicine;" "The Surgery of the Chest in Relation to Retained Projectiles;" "The Most Gentle Profession."

The Murphy memorial oration was delivered before the American College of Surgeons at Montreal, October 11, 1920. In it the author discusses in detail the personality of the late Dr. John B. Murphy and describes him as the greatest clinical teacher of the day.

With language peculiar to the author alone, he paints a word picture of Dr. Murphy from the time he entered his operating arena until he made his final bow, such that the reader can almost imagine himself back in the amphitheatre of old Mercy Hospital straining his wits that he might grasp the wealth of knowledge imparted by that great surgeon.

He discusses the work and teachings of Hyppocrates, Galen, Harvey, and all the principal landmarks in surgery down to the present day, each in his own particular endeavor, and concludes that Murphy may justly be ranked as one of the earliest and one of the greatest exponents of the methods of combined research. He then discusses, briefly, the various works of Murphy, and pays him the highest tribute for his sussessful attainments.

In his essay, "The Ritual of a Surgical Operation," the author says: "Every operation in surgery is an experiment in bacteriology. The success of the experiment depends, not only on the skill, but also upon the care exercised by the surgeon in the ritual of the operation." With attention to every minute detail, he discusses all the precautions necessary to bring about the best results. While from the ordinary surgeon these may be considered commonplace remarks, a detailed study of this essay gives one a keener insight into the world-renowned success of the greatest surgeon of them all. In closing he says the successful surgeon needs the gifts of which Thomas Fuller spoke; "An Eagle's eye, a Lady's hand, and a Lion's heart."

In "The Diagnosis and Treatment of Gastric Ulcer" he says the modern methods of the radiographer and surgeon have made it necessary to rewrite much of what has been written on this subject. He discusses the symptoms of gastric ulcer in detail and maintains that it exists with comparitive rarity, as compared with the frequent diagnosis of this condition that we find made in the out-patient medical clinics. He maintains that quite definite symptoms accompany ulcers at different locations in the stomach and duodenum, or, at least, the greater number of them. He also discusses, briefly, the various conditions that are frequently confused with gastric ulcer.

The value and methods of radiographic examination are discussed. The author believes that this in the hands of a properly qualified man is of more value in diagnosing a gastric ulcer than all other methods combined.

The various methods of treatment are discussed fully. He believes in a fair trial of medical treatment in all cases, but does not seem to think that a large percentage of the total number are cured in this way.

Of the various procedures he prefers partial gastrectomy or his gastro-enterostomy in "Y" combined with jejunostomy for the relief of gastric ulcer.

In "Disappointments after Gastro-enterostomy" he says the operation of gastro-enterostomy carried out in appropriate cases by a competent operator, is probably the most successful of all surgical procedures of equal magnitude. The success or failure of an operation may be due, not only to the procedure itself, but to its performance in cases which did not need it. Nine out of ten failures are due to performing this operation in the absence of an organic lesion justifying it. He discusses very fully the various conditions in which the symptoms lead one to suspect an organic lesion justifying gastro-enterostomy, and then takes up the various other causes for failure in this operation.

In "Intestinal Stasis" he says it is asserted that certain bands or adhesions obstruct the intestine, favoring increased decomposition and bacterial proliferation, and that from the toxins absorbed a very large number of diseases result. He does not agree with those who hold that a great number of diseases will be cured by colectomy without special attention to the lesion in question. On the other hand, he believes colectomy, or at least a partial colectomy, is justifiable in some cases, but in many conditions for which the enthusiasts claim the colon responsible, we must look for some other focus of infection.

Under "Acute Emergencies of Abdominal Diseases" he discusses acute appendicitis, perforating ulcer, acute pancreatitis, cholelithiasis, and tubal pregnancy, with a very definite differential diagnosis of each.

In "The Gifts of Surgery to Medicine," he speaks of the crude methods there were for verifying medical diagnosis before the modern surgical procedure was introduced. The introduction of ether anesthesia, and the improvements in asepsis and surgical technic, and the anoci-association of Crile have made it possible for the surgeon to conduct his investigations into the conditions of disease in an entirely novel manner. He discusses the various abdominal conditions that were confused formerly, and it was only after comparatively safe exploratory abdominal operations could be carried out, that many of these conditions could be cleared up.

In "Surgery of the Chest" his discussion concerns only projectiles in the thoracic cavity. He considers (1) pathological changes caused by projectiles within the chest; (2) symptoms to which they give rise; (3) operations for the removal of projectiles.

In "The Most Gentle Profession" he contrasts the nurse of ancient times with the nurse of the present time. He discusses the difficulties encountered in private nursing, and, in a masterly way, advises the nurse not only to gain the proper knowledge but to use it justly. He further discusses the real attributes of a successful nurse.

J. M. Hayes, M. D.

REPORTS OF SOCIETIES

THE HURON (S. D.) MEDICAL SOCIETY

The Society rather capably observed "The national Cancer Week" on October 30-November 5, advocated by the American Society for the Control of Cancer.

At the Rotary, Wednesday noon, Dr. B. H. Sprague talked on the need of early diagnosis and care of cancer cases.

At the Kiwanis, Thursday noon, Dr. H. L. Saylor talked on cancer, and on Thursday, at 5 P. M., two reels of cancer film, entitled "Courage," were shown at the Lyric. Over 300 of the Huron people enjoyed the film. This film was brought to Huron by Dr. F. Koren, of Watertown, the South Dakota chairman of the American Society for the Control of Cancer. On Thursday at 6:30 P. M., Manager Tyler of the "Marvin Hughitt" served the members of the society an elegant and bounteous dinner in the assembly-room. After coffee and cigars the meeting was called to order. Mr. H. M. Cass, State Secretary of the South Dakota Public Health Association, spoke briefly of the work being done by the Association and the urgent need of a full-time public health officer for Beadle County.

Dr. B. H. Sprague presented a masterly review of the cancer question, past and present, urging the early examination and diagnosis, and also the best care of the case, be it surgical, *x*-ray, or radium.

Dr. F. Koren, of Watertown, then gave a fine talk on "What Is Cancer and What Is Radium?" and how much help can be expected from the use of radium in the treatment of cancer cases.

Dr. H. L. Saylor related several interesting cases of cancer in nose and throat work.

Dr. O. R. Wright thought many cases may be helped by proper use of *x*-ray. General discussion followed.

Mr. Wm. Griffith, a junior of Medical School of the University of Minnesota, then demonstrated, with lantern-slides, many fine microslides of various forms of carcinoma and sarcoma.

Dr. L. N. Grosvenor demonstrated some fine slides of carcinoma of the choroid, the sixty-fourth case ever recorded in medical literature.

The meeting was the finest medical gathering of our District Society in years.

L. N. Grosvenor, M. D., Secretary.

MEWS ITEMS

Dr. E. M. Wilson has given up practice in Browning, Mont.

Dr. E. M. Watson has moved from Hope, N. D., to Fargo, N. D.

Dr. W. H. Long has moved from Dickinson, N. D., to Rochester, Minn.

Dr. Irene Smedley has moved from Sioux Falls, S. D., to Nashua, Iowa.

Dr. O. W. McClusky has moved from Carrington, N. D., to Kenosha, Wis.

Dr. C. P. Farnsworth has moved from Mitchell, S. D., to Chamberlain, S. D.

Dr. John Rundstrom, a pioneer physician of this state, died last month in St. Peter at the age of 86.

Dr. D. R. Searle, of Superior, Wis., has gone to Europe to study surgery, mainly in Paris and Vienna.

Dr. Floyd E. Best, of Wells, was married last month to Miss Louetta M. Hinderks, of Freeport, Ill.

Dr. W. J. Dowswell, formerly of Bellingham, has become associated with Dr. Oscar Daignault, of Benson.

Dr. E. Klaveness, of Minneapolis, has returned from Europe, having visited in England, Norway, Denmark, and Germany.

The handsome gift of Dr. A. E. Benjamin, of Minneapolis, to the Hennepin County Medical Society, is commented upon in our editorial column.

Dr. R. L. Laney, formerly of Bemidji, has been appointed medical director of the Lake Julia Tuberculosis Sanatorium, which is near Bemidji.

Dr. J. P. Sedgwick, of the Department of Pediatrics of the University Medical School, has been granted a leave of absence for the current quarter.

Dr. C. A. Hjelle has moved from Clifford, N. D., to Portland, N. D., taking the practice in the latter place of Dr. K. A. Wadel, who has gone to Fargo, N. D.

Dr. L. P. Foster, of Minneapolis, observed his eighty-fifth birthday this month. He was born in Fort Pitt (now Pittsburg), Pa., and came to St. Anthony in 1848.

The citizens of Wahpeton, N. D., show a real interest in their city hospital, and have contributed liberally to it since it was built, a year ago. It is now building a detention home.

Dr. C. H. Haas, of St. Paul, who was charged with performing an illegal operation on a woman, was cleared by a jury in fifteen minutes, and most of the evidence was given by the woman herself.

Dr. George F. Merritt, of St. Peter, died on October 26 at the age of 75. Dr. Merritt graduated from Rush in 1872 and began practice in St. Peter in 1883, and continued practice there until his death.

The Glen Lake Sanatorium, near Minneapolis, has been tendered a donation of $200,000 by the citizens of Minneapolis to erect a building for the care of tuberculous children; and the gift has been accepted.

Dr. R. E. Woodworth, of the South Dakota State Sanatorium, recently held what is said to be the first tuberculosis clinic ever given in that state. The result of it in the number of cases discovered surprised the county officials.

Nearly two hundred students applied for admissions to the freshman class of the Medical School of the University of Minnesota this fall, but only eighty could be admitted, the School being limited to that number in any one class.

The cost of operating the Tuberculosis Sanatorium in Otter Tail County has become so burdensome to the taxpayers, and the institution is so poorly patronized, that the County Commissioners have seriously considered closing it up.

The Winona General Hospital has received $75,000 in donations in the past few months, and this sum or more will be used for improvements.

The Southern Minnesota Medical Association will hold its annual meeting at Mankato on December 5 and 6. Copies of the program can be had of the secretary of the Association.

Dr. K. A. Wadel has moved from Portland, N. D., to Fargo, N. D., and has joined the Fargo Clinic. Dr. Wadel recently returned from Dr. Allen's Sanatorium, near New York City, where he specialized in the treatment of diabetes and obesity.

A Physicians' and Nurses' Registry has been opened in Duluth to do the work done in the Twin Cities by the Physicians' Exchange, that is, to locate a physician or nurse for the public at any time, day or night, without charge to the applicant.

Dr. Haldor Sneve and Dr. F. L. Beckley, of St. Paul, have been elected, respectively, president and vice-president of the St. Paul Town and Country Club. Which Doctor represents the "Town" and which the "Country" we do not know.

Dr. Jacob Henry Stewart, of St. Paul, died on October 28 at the age of 60. Dr. Stewart graduated from the College of Physicians and Surgeons of New York City, and did post-graduate work in Berlin and Vienna. He was decorated by the King of Serbia for his work in the World War.

Minneapolis has two physicians on its pay-roll to assist doctors in the diagnosis of contagious diseases. At the end of the first month the inspectors had assisted in one case, and their perquisites were $276. They should be sent to Johns Hopkins to learn the gentle art of charging. N. B.—They have been dropped.

The work of the various public health organizations that met at the University of Minnesota last month was a splendid object lesson to the public of what is being done by medical men and public-spirited laymen to better the health conditions in this country. Such work will almost conquer disease in one or two generations.

"The Doctors' Club of Bemidji" has been organized by the physicians in that city, and the following officers were elected: President, Dr. E. H. Smith; vice-president, Dr. Rowland Gilmore; secretary-treasurer, Dr. Baldwin Borreson. The Club will hold bi-weekly meetings for the consideration of matters of interest to its members and the public.

Cancer Week took on a national scope this year, and the public has thoroughly learned two things from the week's conferences: First, that cancer takes a toll from the human race almost unequalled by any other disease; second, that early diagnosis and treatment alone can cure it.

Dr. Charles Vernon Fox, of Wessington Springs, S. D., died last month at the age of 55. He graduated from a St. Louis (Mo.) medical school, and went to Dakota in 1893. He had recently moved to Mellette, S. D., after practicing twelve years in Wessington Springs. He was a man of high character and was greatly beloved by all in his community.

Dr. A. W. Abbott, of Minneapolis, contributed a paper to the last meeting of the Hennepin County Medical Society on "Some Offenses Which Transgress the Principles of Right Doing, but Are Not Emphasized in Our Code." Dr. Abbott has walked up and down "Main Street" for many years with his eyes open, and has seen things. This paper will appear in our columns soon.

At the annual meeting of the Soo Railway Surgical Association, held in Chicago last month, the following officers were elected: President, Dr. A. H. Collins, Duluth; vice-president, Dr. A. O. Aaker, Velva, N. D.; secretary-treasurer, Dr. J. H. Rishmiller, Minneapolis. The next annual meeting will be held in Minot, N. D.

The Kenmare (N. D.) Hospital has been sold by the Drs. Ewing to the Methodist Church. The price paid is said to be $50,000.

The University of South Dakota has made a survey of the physicians of that state. It shows that 60 per cent of those who answer the questions asked have practiced 15 years; 30 per cent have practiced 20 years; and only a few have practiced less than 6 years. The earnings, gross and net, indicate a high average, as compared with such earnings in other states. Unless more physicians are attracted to the state, a dearth of medical men will soon result.

The second course in Public Health Nursing for 1921-22 will open on January 4, 1922, at the University of Minnesota. Lecture courses are given by University teachers in the Medical School and the Department of Sociology and by representatives of the State Board of Health. Practical work is conducted in cooperation with the Hennepin County model practice field, the Visiting Nurse Association, the Infant Welfare Society, the Public School Department of Hygiene, the industrial services of private corporations, the County Tuberculosis Sanitoria, and the Medical Social Service Department of the University Dispensary. A tuition fee of $25.00 and contingent fees amounting to $7.00 cover the course in each four months' period. Applications should be made to Miss Louise M. Powell, Superintendent, School of Nursing, University of Minnesota.

Dr. F. W. Ferguson has moved from Starkweather, N. D., to Kulm, in the same state.

Dr. Alexander Donald, of St. Paul, died last week at the age of 75. Dr. Donald graduated from Hahnemann, Chicago, in 1880, and soon began practice in Minnesota. He was very prominent in Masonic circles.

NEW MEMBERS OF THE AMERICAN COLLEGE OF SURGEONS

The following surgeons have been elected Fellows of the American College of Surgeons since its last annual meeting in 1920:

MINNESOTA

Alfred N. Bessesen	Minneapolis
Arthur F. Bratrud	Minneapolis
Kenneth Bulkley	Minneapolis
August E. Johnson	Minneapolis
Henry H. Leavitt	Minneapolis
Matthew J. Lynch	Minneapolis
Jalmar H. Simons	Minneapolis
George E. Strout	Minneapolis
Henry C. Stuhr	Minneapolis
Roscoe C. Webb	Minneapolis
Douglas Wood	Minneapolis
Herbert M. N. Wynne	Minneapolis
Otto W. Yoerg	Minneapolis
Alfred W. Adson	Rochester
Rudolph G. Andres	Rochester
Henry E. Binger	St. Paul
George A. Geist	St. Paul
Oscar W. Holcomb	St. Paul
William W. Lewis	St. Paul
John L. Shellman	St. Paul
Roy A. Barlow	Rochester
Verne Carlton Hunt	Rochester
Harold I. Lillie	Rochester
Gordon B. New	Rochester
George E. Sutton	Rochester
William R. Bagley	Duluth
John J. Eklund	Duluth
Leonard C. Weeks	Detroit
John A. Winter	Duluth
Berton J. Branton	Willmar
Peter C. Davison	Willmar
John S. Holbrook	Mankato
Carl J. Holman	Mankato
Charles B. Lenont	Virginia
Orville N. Meland	Warren
Christian P. Nelson	Owatonna
Arichibald W. Robertson	Litchfield

MONTANA

Clifton C. Albright	Great Falls
Houston H. Parsons	Sidney
John E. Sievers	Butte
Malcom E. Smith	Forsyth

NORTH DAKOTA

Aloysius P. Nachtwey.....Dickinson
Martin W. Roan.....Bismarck
Lloyd A. Schipfer.....Bismarck

SOUTH DAKOTA

Daniel S. Baughman.....Madison
William D. Farrell.....Aberdeen
Martin M. Grove.....Dell Rapids
Arthur S. Jackson.....Lead
Edward W. Jones.....Mitchell
Edwin L. Perkins.....Sioux Falls
John C. Shirley.....Huron
R. George Stevens.....Sioux Falls
Frederick Treon.....Chamberlain
Granville H. Twining.....Mobridge

LIST OF HOSPITALS IN THE STATES NAMED APPROVED BY THE AMERICAN COLLEGE OF SURGEONS

OF 100 OR MORE BEDS

MINNESOTA

Bethesda Hospital, St. Paul.
City and County Hospital, St. Paul.
Colonial Hospital, Rochester, Minn.
Deaconess Hospital, Minneapolis.
Eitel Hospital, Minneapolis.
Fairview Hospital, Minneapolis.
Minneapolis General Hospital, Minneapolis.
Mounds Park Sanitarium, St. Paul.
St. Joseph's Hospital, St. Paul.
St. Luke's Hospital, St. Paul.
St. Mary's Hospital, Duluth.
St. Mary's Hopsital, Minneapolis.
St. Mary's Hospital, Rochester.
St. Mary's Hospital, St. Paul.
Swedish Hospital, Minneapolis.
University of Minnesota Hospital, Minneapoils.
Worrell Hospital, Rochester.

MONTANA

Columbus Hospital, Great Falls.
Montana Deaconess Hospital, Great Falls.
Murray Hospital, Butte.
St. James' Hospital, Butte.
St. Patrick's Hospital, Missoula.

NORTH DAKOTA

Bismarck Evangelical Deaconness Hospital, Bismarck.
Grand Forks Deaconess Hospital, Grand Forks.
St. Alexius' Hospital, Bismarck.
St. John's Hospital, Fargo.
St. Luke's Hospital, Fargo.

SOUTH DAKOTA

McKennan Hospital, Sioux Falls.
St. Luke's Hospital, Aberdeen.

LOCUM TENENS WANTED

For the latter part of December or early January for two or three months in a Minnesota firm. Leaving for post-graduate work and desire good man. Address 189, care of this office.

PHYSICIAN WANTED

A young man with surgical ability to locate in a thriving small town in central Minnesota, five miles from a well-equipped hospital, to work with the owner of the hospital. Eventual partnership in view. Address 191, care of this office.

PHYSICIAN WANTED

In a town near the Twin Cities. A fine village with all modern improvements and a splendid school. A good location for a good man. Address 190, care of this office.

TECHNICIAN WANTS POSITION

A young woman of fine training as a technician who has acted as an assistant and nurse in a well-known physician's office, desires a position, and will go outside of the city if necessary. Address 192, care of this office.

PRACTICE FOR SALE

Unopposed practice for sale in a county seat town of 655 in Southwestern Minnesota. Fine farming country; crops good. Nearest competition 12, 14, 18, and 24 miles. Catholic preferred. Price of property, $4,300; $1,200 cash. Address 177, care of this office.

LOCATION WANTED

A young physician with good surgical training desires a location with hospital facilities. Can locate immediately. Will pay a reasonable price for office equipment. Highest of references. Address 180, care of this office.

ONE NEW HEIDBRINK GAS MACHINE FOR SALE.

Will sell above machine for half price. It is new and includes a portable case for the machine. A. B. Eastby, 116 West Grant street, Minneapolis, Telephone, Atlantic 4898.

LOCATION OR LOCUM TENENCY WANTED.

Location in a prosperous community, or will act as locum tenens for the next six months. Address 182, care of this office.

FARM PROPERTY FOR PRACTICE IN CITY

I will exchange my equity in a fine Eastern North Dakota farm for practice in a city with residence or city property. Address 179, care of this office.

OFFICE ROOM FOR RENT IN MINNEAPOLIS

One room and joint use of reception room in a physicians' and surgeons' building in Minneapolis. Tel. Main 8541.

PHYSICIAN WANTED

A good doctor is wanted in Dent, Minn., a town of 300, in a fine dairying country with a very large territory. Address Dent Commercial Club, Dent, Minn.

BOOKS AND APPARATUS FOR SALE

The books, instruments and two operating chairs, a physician's McCaskey account and register system (practically new), and a Schneidel Weston *x*-ray machine complete, belonging to the estate of the late Dr. Barrett of Glencoe are offered for sale. For particulars inquire of F. R. Allen, Glencoe, Minn.

UNAPPOSED PRACTICE FOR SALE

In a town in southern Minnesota of 500 inhabitants, an up-to-date town that has supported two physicians. Practice at price of office equipment. Reason for selling is poor health. Address 193, care of this office.

PRACTICE FOR SALE

A practice for the price of the office equipment in a town in Dunn County, Wisconsin, on the St. P., M. and O. R. R., between Minneapolis and Chicago. Practice pays $5,000; good territory; no competition. Terms to suit purchaser. Address 188, care of this office.

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STATUS OF THE BONE GRAFT IN THE TREATMENT OF FRACTURES*

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Fractures may be divided into two groups, recent and old. Insomuch as the treatment of recent fractures is usually carried out along non-operative rather than operative lines, the bone graft will seldom be used. Special instruments and more or less specialized training are requisite to the use of the bone graft; therefore, I believe that when using anything beyond conservative treatment, the majority of surgeons will prefer a metal internal splint in the treatment of recent fractures. For the purpose of this discussion I shall limit my remarks to the use of the bone graft applied to old fractures, although, under proper conditions, with the proper instruments, and with adequate experience on the part of the surgeon, there certainly is no objection to its use in fresh fractures.

Whether the bone graft lives and functions or whether it dies and is replaced by new bone from the fragments, has been widely discussed. From a practical point of view this is of no particular significance. My clinical experience leads me to believe that in the majority of instances the bone graft is absorbed, though not necessarily in its entirety, and is replaced by new bone. There may be exceptional instances in which the bone graft receives sufficient nourishment to function and to prevent absorption and replacement by new bone. I believe, however, that it is much safer, so far as the result is concerned, to accept the dictum that the bone graft is always absorbed and replaced by new bone.

There are three types of bone graft to consider: (1) the intramedullary graft, which, I believe, all will agree is in reality a foreign body and is completely absorbed; its use is limited and in the main might well be relegated to the surgical scrap heap; (2) the inlay method, which is a perfect anatomic apposition of parts, and as such is an attractive surgical procedure; and (3) the massive graft, which appeals largely on account of its strength; in many instances it is the method of choice.

It may be well, briefly, to consider the anatomy and physiology of bone. Bone is composed of three layers.

1.—The periosteum, from a clinical point of view, may safely be regarded as a limiting membrane; whether or not it has bone-forming properties is argued pro and con. It would seem as though under certain predisposing conditions, such as osteomyelitis it might have something

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to do with bone-formation, but to trust to it alone in the treatment of fractures is to court failure.

2.—The hard cortical bone is the finished product of the bone-forming elements and in itself has probably little, if any regenerative powers.

3.—The endosteal layer or cancellous tissue is rich in bone-forming osteoblasts and is the tissue that should chiefly be relied on to form new bone.

I wish to emphasize that I am speaking of old fractures, not of recent fractures. It is more than probable that in recent fractures where the periosteum and certain elements of the cambium layer are torn loose the periosteum forms callus, but this same property is certainly not shown in the old fractures. (The cambium layer of the periosteum is quite active in forming the involucrum in osteomyelitis.) The inlay graft is a piece of bone, comprising all the layers, taken out and placed in a slot prepared for it. Only at the corner of the graft and at the margin of the slot do the endosteal layers come in contact. In the employment of the inlay method in certain bones, such as the radius and ulna, the size of the graft is necessarily limited. In the employment of the massive graft the hard cortical bone of the fragments is chiseled away until the cancellous area of the bone is exposed. The area bleeds freely and is, as I have mentioned, the tissue which is rich in the bone-forming osteoblasts. A larger graft than it is possible to use in the inlay method may be taken from the tibia, endosteal bone be exposed by removing the medullary fat; and by placing beef-bone screws through the graft and the opposite cortex of the fragments the graft may be so firmly clamped that it soon becomes adherent to the fragments. The massive graft increases the diameter of the bone about 20 per cent in the area in which it is used.

Personally, I prefer to use the massive graft wherever practical. It is not practical in the tibia, because it so increases the diameter of the tibia that it is difficult to close the wound.

Old fractures may be further divided into malunion, delayed union, and non-union. In cases of malunion the problem is the correction of the deformity, and, as there is usually no difficulty in obtaining union, the bone graft is not particularly indicated in this group. In discussing the individual grafts in the bones, therefore, I shall refer only to the ununited fractures, consisting of delayed union and non-union.

Delayed union is not a fixed condition as is non-union. In cases of delayed union many months after the fracture, there may be evidences of an attempt to repair. In cases of non-union in which typical false joints are seen there is no such evidence of an attempt to repair.

Fractures in various bones present various problems. I shall consider the long bones individually and cite histories of cases, in some of which bone grafting was not employed, but they are used as contrasts.

Non-union in the tibia is relatively common. There seems to be no good reason for this since the fibula ordinarily unites and thus serves as a splint for the tibia. This may however, be a hindrance rather than an aid because the fibula may act as a pivot around which the tibia swings.

Pott's fracture is usually considered a fracture of the ankle. It occurs often, and, the valgoid deformity which follows it occurs altogether too often. It is due to faulty position following malunion.

Case 1 (344155).—Mrs. H. S., aged 34, came to the Clinic December 20, 1920, because of marked disability due to valgoid deformity following Pott's fracture of the right ankle.

December 23 osteotomy of the tibia and fibula was performed. The astragalus was pushed over into line and held in the position by placing a beef-bone screw from above downwards through the tibia into the internal malleolus. The bone graft is not necessary in this type of fracture, although it may be used as a peg, as the beef-bone screw was used in this case.

The patients in Cases 2 and 3 had bone grafting operations for typical non-union in the lower one-third of the tibia. In one the fibula of the same leg was used as a massive graft and in the other an inlay graft from the opposite leg was used.

Case 2 (279058).—Miss M. J., aged 21, came for examination July 11, 1919, because of non-union of the lower third of the left tibia of seven years' duration. She had been operated on five times, and each time it was believed that union had occurred. Metal plates were used twice, and bone grafts were used twice.

July 22, a piece of the fibula from the same leg was applied as a massive graft. Good union was secured and has been maintained. It is now nearly two years since the operation. We used the fibula in this case because the patient objected to having bone taken from the other leg, fearing that non-union might result. (Fig. 1).

Case 3 (278532).—Mr. L. M., aged 24, came for examination July 5, 1919, because of an ununited fracture of the right tibia caused by a revolver bullet. The day following the accident the bones had been sutured with silver wire. Suppuration followed, and five months later the wires were extracted. Operation was again performed within a year, without union.

July 9 we placed a bone graft from the left tibia as an inlay, holding it in place by four beef-bone screws. Union followed. Röntgenograms showed complete union in the tibia, but the fibula is still ununited. It is not

necessary to pay any attention to the fibula in cases of non-union of the bones of the leg.

The patient in Case 4 presented himself with malposition and delayed union. The fracture was spiral and oblique in the lower one-third. After refracturing the fibula and exposing the tibial ends, position was maintained by the aid of four beef-bone screws. Good side to side apposition was obtained.

Case 4 (334089).—Mr. C. B., aged 20, came for examination September 14, 1920, as an emergency case. He had fallen from a silo, landing on his left foot. The röntgenogram showed fractures of the lower third of both tibia and fibula. The patient was treated conservatively, but union was delayed. November 30 an open operation was performed. It was necessary to fracture the fibula in order to obtain a proper line. The fracture being spiral and oblique, the surfaces were coapted and four beef-bone screws used to hold them together. The point of interest in this case is, that the union was delayed following careful conservative treatment. While I believe that the patient would ultimately have obtained union it seemed best to line up the fragments, and hold them in place by beef-bone screws. A bone graft was not used because in a spiral oblique fracture sufficient coaptation of bones without shortening can be obtained without it.

Cases 5, 6, 7 and 8 of fracture of the neck of the femur are cited as illustration of the advise given and the methods used. These cases are particularly intractable to treat.

Case 5 (199652).—Mrs. C. McC., aged 59, came to the Clinic June 30, 1917, because of fracture of the neck of the left femur. Because of the patient's age and the marked absorption of the neck of the bone operative measures were not advised. This case is cited as an instance in which bone grafting would be of no avail. Experience has taught us that when there is so much absorption of the neck of the femur bone grafting is useless. There are two methods that might give better function: One in which the top of the trochanter is rounded off and fitted against the freshened head with the leg in abduction, according to the method of Brackett; and one in which the head and part of the trochanter are removed, and the end of the femur placed in the acetabulum. Of the two methods I prefer the former.

Case 6 (307814).—Mrs. M. M., aged 35, came for

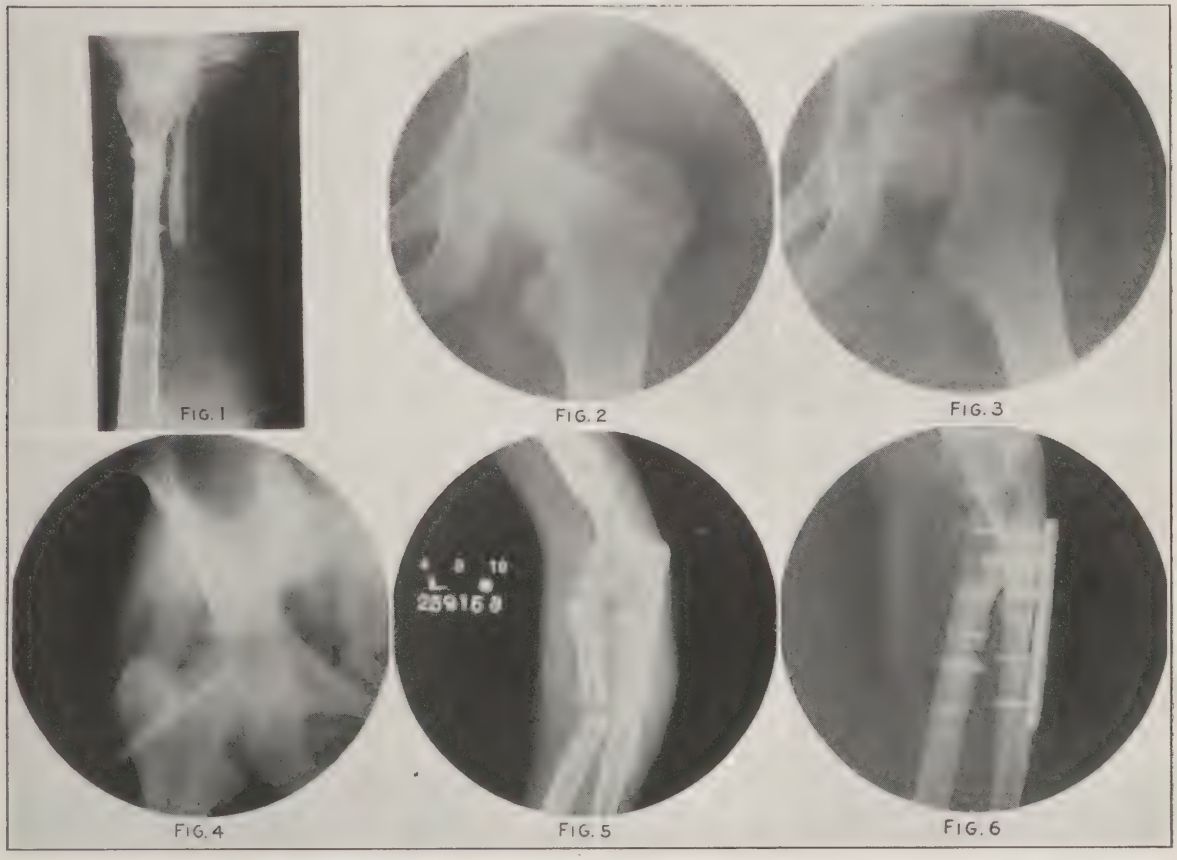


Fig. 1. (279058). Non-union of seven years' duration cured by using the fibula of the same leg as a massive graft held in place by beef bone screws.

Fig. 2. (307814). Non-union of the neck of the femur of four months' duration.

Fig. 3. (307814). Repair of fracture by means of fibula. The same case is shown in Figure 2.

Fig. 4. (216507). Beef-bone screw used in delayed union of fracture of the neck of the femur.

Fig. 5. (259153). Non-union of the radius and ulna of two years' duration. The ulna was first repaired with a massive graft and beef-bone screws.

Fig. 6. (259153). The radius repaired. The same case is shown in Figure 5.

examination March 2, 1920. In November, 1919 the patient had fallen on the ice and fractured the neck of the left femur (Fig. 2). She was in bed ten days. The röntgenogram did not show a fracture, and she was allowed to be on her feet for two weeks, and then a cast was applied for two and one-half months. Union did not occur.

Operation was performed March 12, and a piece of the fibula was used as a transplant. The surfaces of the fractured neck were freshened, and the bone graft, consisting of the entire thickness of the fibula of the same leg, was driven through a hole bored for it through the trochanter into the neck and head (Fig. 3). Union was complete June 25. Care must be taken that the fibula is not driven into the acetabulum, for this causes traumatic arthritis of the joint with marked limitation of motion.

Case 7 (301092).—Miss H. O., aged 30, came to the Clinic for examination December 31, 1919, on account of an old fracture of the neck of the right femur. Nine months before she had fractured the right hip.

January 6, 1920, a piece of the fibula was placed through the trochanter into the neck. This case is cited merely to illustrate an instance in which the bone graft was placed too deep, and the patient, although she now has a perfect anatomic result so far as the neck of the femur is concerned, has marked limitation of motion. Our operation, successful so far as the fracture is concerned, has left in its wake a traumatic arthritis.

Case 8 (216507).—Mr. W. L. K., aged 27, came for examination December 13, 1917. Two months before he had been in a railroad accident, fracturing the neck of the right femur. He was operated on December 20, 1917, a good firm union being secured by the aid of a beef-bone screw. This is an instance of delayed union, which at the time of operation, did not show a tendency to unite. The beef-bone screws in a fracture in this situation which is merely delayed in uniting are, I believe, to be preferred to the autogenous bone graft and offer a satisfactory means of obtaining union (Fig. 4).

In Cases 9, 10, 11, and 12 of fracture of the shaft of the femur, metal plates, beef bone plates, and screws were used.

Case 9 (231980).—Miss V. P., aged 28, came for examination May 20, 1918. The shaft of her right femur had been fractured December 17, 1917, while she was coasting. She was treated in bed by extension and sand bags for ten weeks without result.

May 23 the fragments were exposed and an eight-hole Lane plate applied. I cite this case to show that although theoretically an autogenous bone graft is preferable to the metal plate, one should not hesitate to employ the metal plate even in cases of non-union, particularly if the operation is to be prolonged and the patient is in danger of shock, since the plates may be more quickly applied. In a recent letter this patient has stated that union is absolute and function good.

Case 10 (329841).—H. B., a child, aged 6, was brought to the Clinic August 15, 1920, because of a spiral oblique fracture of the middle third of the left femur. A bone graft was not necessary in this case since sufficient bony surfaces were readily coapted without shortening. Beef-bone screws were placed through to steady the parts so as to control the position.

Case 11 (298374).—J. F. Z., a child, aged 11 months, was brought for examination December 1, 1919, with a fracture of the middle third of the left femur, in malposition, which might have progressed to non-union.

A beef-bone plate was employed in this case because it is less irritating to the tissues and because a second operation for its removal would not be necessary. The result has been excellent.

Case 12 (248582).—Mr. C. F. D., aged 49, came for examination October 16, 1918. Five months before his right femur had been fractured in an automobile accident, with over-riding and posterior displacement of the lower fragment. Because of the marked contraction of the tissues, tending to cause recurrence of the deformity, some form of internal fixation was necessary in order to hold the fragments. Metal plates were used, as the simplest way out of the difficulty.

Cases 13, 14, and 15 of non-union of the humerus are illustrative of the different procedures that can be followed.

Case 13 (293533).—Mr. H. C., aged 41, came for examination October 17, 1919. Three years before he had sustained a compound fracture of the lower third of the humerus by a blow from an iron pipe. He was operated on the same day and a metal plate applied. At the end of three months there was slight union, but on use this melted and a typical false joint resulted. Musculospiral paralysis with wrist drop was also present. Since the wound has been healed six weeks only, the patient was sent home for a few months.

March 26, 1920, a massive graft was applied. In three months union was firm. The massive graft is the most satisfactory in cases of fracture of the humerus. We have since transferred the flexor tendons of the wrist to the extensor tendons for the wrist drop, with very satisfactory results.

Case 14 (323721).—Mr. R. H. A., aged 28, came for examination July 8, 1920. His left humerus had been fractured nine months before.

July 16 a four-hole bone plate was applied. The fragments of the bone were stepped, and good bony contact was secured at the expense of about one inch of shortening. On account of this bony contact of the fragments and to save time a beef-bone plate was also applied.

Case 15 (277690).—Mr. H. B., aged 70, came for examination July 1, 1919, with a fracture of the left humerus sustained three years before. Ten months later he was operated on at his home, a metal plate being inserted. No union followed.

July 12 an attempt was made to obtain union by the use of the beef-bone pegs, but this was a failure. September 4 a piece of the left fibula about seven inches in length, flat on one side so that it acted as a massive graft, was transplanted. In spite of the osteoporotic condition, union followed. Osteoporosis usually means failure, even though a bone graft is used; in this particular instance, however, the osteoporosis was more apparent than real as the man had been using his arm freely before he came for consultation. When an arm has been in a cast for a long time, and there is a good deal of osteoporosis, an operation should not be undertaken until the arm has been used and the fragments are in a more normal condition.

In Cases 16 and 17 massive bone grafts were used in conjunction with beef bone screws. We have found grafts of this type particularly useful in the bones of the forearm.

Case 16 (261480).—Mr. J. D., aged 27, came for examination February 22, 1919. September 7, 1918, he had caught his right arm in a fan blower in a threshing machine, sustaining a comminuted fracture of the right radius. Later the bone was plated, but infection followed, and February 27, 1919, a large sequestrum was removed; healing occurred gradually.

February 5, 1920, a massive graft was taken from the right tibia and fastened by aid of beef-bone screws. November 13 a small piece of bone was removed from the lower end of the ulna. Union of the radius was complete, and he had been working eight hours a day shoveling sand for two months.

Case 17 (259153).—Mr. J. McB., aged 28, came for examination February 5, 1919, with an ununited fracture of the left radius and ulna of two years' standing (Fig. 5). Intra-medullary bone grafting had been performed and had failed. Massive grafts were then used, and union followed (Fig. 6).

SUMMARY

The bone graft is not necessary in the treatment of recent fractures. The conservative closed method will, I believe, always be the method preferred, and next in preference some form of internal fixation either by metal or beef-bone plates.

The bone graft is the method preferred in cases of nonunion, and the massive graft gives the best means of obtaining union.

Since the bone graft is absorbed in part, at least, it is safer from a clinical point of view to regard it as being completely absorbed and replaced by new bone. It is essential, therefore, that the graft be large so that absorption will be slow thus giving time for more callus to be deposited; and post-operative fixation must be firm enough and prolonged enough to protect the graft before heavy strain is allowed on the part. The massive graft fulfills these requirements better than either the intramedullary or the inlay grafts.

DISCUSSION

Dr. F. E. Clough (Lead): To those who are attempting to do bone work or to mix it with the treatment of fractures, I think this afternoon's session has been worth listening to.

I have been asked to open the discussion on bone grafts in connection with recent fracture work, and Dr. Henderson emphasizes particularly the one point I want to bring out, namely, you can still be in good standing with the medical profession and not go in and graft your recent fractures. It is unnecessary to operate on many recent fractures of bone. My remarks are based on old fractures, which most of us do not see. I want to add this one point in addition, that we do not have to graft all the recent fractures, and that a graft, when put into a fracture, is not a sufficient dressing in the way of immobilization. There must be some other mechanical means employed to hold the limb in a quiet position. A great many failures result because that is not taken care of.

This is an excellent paper, and one we should all draw good lessons from.

Dr. Fred Treon (Chamberlain): I would like to ask Dr. Henderson about a patient I referred to him two years ago, a Mrs. Mary Olson, of Murdo, with an ununited fracture of the humerus. She came back after being in Rochester for, I think, about six months; probably it was not quite so long, and she still had the ununited fracture. I would like to know if she went back to Rochester and what the final result in the case was?

Dr. Henderson: Was there any infection?

Dr. A. C. Stokes (Omaha, Nebraska): I wish to compliment Dr. Henderson on his excellent paper. I have been trying to get some kind of bone graft or splint that would hold the bone in position, if we need it, and have not succeeded very well so far. Some device is necessary to hold the bone in position, so that is will heal; and that is what I have been trying to find. I have tried a good many things. I have tried strong catgut, and I have tried kangaroo tendon; and they did not work. I have had to go back to the Lane plate, which has a place in surgery. In my opinion the only place in surgery for the Lane plate is when we cannot get anything better, and the last word in any kind of fracture has not been said. If we could only get something that will become absorbed and not irritate the area in which it is applied, then we would have something we would like to use.

I desire to ask Dr. Henderson the following questions:

1. Do these ox-bone grafts become incorporated in the bone itself?

2. Are they absorbed, and, if so, when and in what length of time?

3. How much callus is thrown out about these grafts in the healing process?

Mr. Lane has taught us much regarding the use of bone plates. I remember him saying at a meeting of the American Medical Association, in answer to a long discussion in which he had been taking part, that the results we get from treating fractures without operation will drive us to operate on more fractures than we have heretofore, and I think, as time goes on, we will have to operate on fractures more frequently than we have done in the past. I am operating on a great many new fractures, such as fractures of the elbow, which are so freqeuntly accompanied by imperfect motion, and fractures of the thigh, where we get so many times shortening, and others. If I can get an absorbable material to aid in holding the reduced bone in position, I think the operative treatment of fractures in quite a large percentage of cases, even though it is a new fracture, is preferrable to the expectant treatment.

Dr. Henderson (closing): You will recall I mentioned in my paper that a certain percentage of these patients are not successfully treated, and the patient Dr. Treon spoke of is evidently one of these. I cannot just now remember this particular patient, but many times when the first operation has failed, I have found it necessary to send the patient home with instructions to use the extremity, since this stimulates the bone to

become normal. Often the bone salts are deficient and osteoporosis is present.

Recently I have reviewed very nearly five hundred bone-graft cases treated in the Mayo Clinic. In transplanting in the spine as we do for tuberculosis, the bone grafts practically always heal in and very few ever fracture. Infections in this group of cases are also low,—about 2 per cent. In the fracture group the percentage of infection in clean cases is not very high. In the fracture group as a whole there was 10 or 12 per cent of infection in the cases in which there was no previous infection whereas there was 43 per cent infection following operation in the cases in which there had been infection.

Non-union is a particularly intractable condition to treat, and, no matter what method is used, a certain number of cases will be failures. During the operation considerable manipulation and handling of tissue are necessary as there is often extensive scarring, and the tissues are exposed to the air for a long time, all of which increases the risk of infection. In applying bone screws one must be careful to use the proper instruments and screws of proper size However, as time goes on I am sure our percentage of successes is increasing.

Dr. Stokes brought up the question of fixation, so necessary after bone-grafting operations. We have found that beef-bone screws as a means of fixation internally are convenient, and they last long enough. I think you can safely rely on them to hold firmly for from six to eight weeks. The Lane plate is not an ideal piece of apparatus to use, but I think it has its definite place in surgery. Occasionally, after a long tedious operation, particularly in the femur, one is only too glad quickly to apply a Lane plate, and bring the operation to an end, as the patient sometimes shows shock because of the loss of blood. However, if the beef-bone plates are properly made and the proper instruments are at hand, I believe that a beef-bone plate can be applied just as quickly, and I find we are using more of them as time goes on.

Although not germane to the subject I have chosen for discussion, recent fractures have been mentioned, but they are a somewhat different problem. I find I am operating on more of these than formerly. Whether that is an acknowledgment that I have not the requisite skill to handle them by the closed method I am not sure. I believe that, if a surgeon can see these patients many times a day and watch the apparatus, the conservative method is very satisfactory, but on a busy service the surgeon has not always the time to devote to this, and assistants with a feeling of responsibility are very difficult to obtain, and often they may have the necessary sense of responsibility and not the necessary skill or knowledge to carry on the treatment; therefore I believe that, under proper conditions, the open method is justified.

THE SURGICAL REFLEX STOMACH*

By Arthur T. Mann, M. D., F. A. C. S.,
MINNEAPOLIS.

This is written to call your attention to the rather large class of cases with a surgical lesion in the abdomen which gives reflex stomach symptoms so closely simulating a lesion of the stomach or duodenum that it is often difficult and sometimes well-nigh impossible to say, until the abdomen is opened, that the pathological lesion does not exist in the stomach or duodenum. I refer more particularly to those cases in which a diagnosis of ulcer of the stomach or duodenum has actually been made, or in which it is so strongly suspected that it cannot be ruled out, and to those in which ulcer cannot be ruled out, but in which some other lesion is under consideration as the cause of the symptoms. Sometimes the symptoms of ulcer are not so definitely present, but the stomach symptoms so dominate the picture that an actual stomach disorder seems to exist.

The most common surgical conditions which cause these symptoms are gall-stones, cholecystitis, chronic appendicitis, epigastric herniæ, and adhesions to duodenum or to stomach and sometimes old adhesions elsewhere in the abdomen. I wish to express my appreciation of the valuable services rendered by my associate Dr. Olaf Kittelson, who made a careful preliminary study of most of the cases referred to in this paper, and who made practically all of the *x*-ray examinations and directed the test-meals.

The interest in the subject will perhaps be increased by giving an outline of a few cases of the series before entering upon general discussion.

Case 1.—B. J. M., aged 31. Had had some fullness and distress in the epigastrium for eight or ten years, but has been worse since May, 1918. Since then he has had fullness and distress in the epigastrium with some belching, worse after greasy and fried foods; also a burning in the epigastrium coming on three or four hours after meals and relieved by eating a small amount of food. This has been more marked the last two or three weeks. He usually feels best one hour or so after

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eating. There is some eructation of sour food and water shortly after eating at times and sometimes burning. Appetite is quite good. He is thirteen pounds under his average weight. There is no severe abdominal colic.

Complaint is of the stomach.

General examination, negative. Small reducible epigastric hernia 2 cm. above navel. Moderate tenderness in right upper abdomen about 3 cm. below the right costal margin.

Test-meal: total acidity, 59; free HCl, 38; total quantity, 56 c. c.

Urine, negative except for an occasional hyaline cast.

Diagnosis and conclusions: (1) epigastric hernia; (2) reflex gastric disturbance (chronic appendicitis 60 per cent; chronic cholecystitis, 40 per cent).

History and findings are not absolutely conclusive, but the stomach and duodenum are probably negative. Gastric disturbance may be partly dependent upon the epigastric hernia and partly upon pathology in the appendix and gall-bladder.

Operative findings: stomach, free and normal; duodenum, partly adherent to gall-bladder (a fluoroscopic examination might have helped to determine this); omentum, adherent along anterior surface of gall-bladder to within one-half inch of tip; gall-bladder, more opaque than normal and shows walls slightly thickened.

The gall-bladder was removed and found filled with brownish-black bile and mucus. Raw surfaces were carefully sutured over. Epigastric hernia with one-fourth by one-eight inch opening, containing subperitoneal fat three-fourths inches long. Fat was removed, and hernial opening sutured. Appendix was found with marked adhesions and with a distinct kinking. On section it showed old scar tissue and induration. Appendix was adherent to mesentery and to cecum. Cecum is movable and shows a veil of Jonnesco.

Diagnosis, pre-operative: (1) exploratory; (2) epigastric hernia; (3) chronic appendicitis; (4) chronic cholecystitis; (5) ulcer of duodenum.

Postoperative: (1) old cholecystitis with adhesions; (2) chronic appendicitis; (3) epigastric hernia. All three of these probably were factors in causing the stomach disturbances.

This man was noticeably improved by his operation and gives promise of complete recovery.

Case 2.—M. W., aged 40. No gastric disturbance until December, 1918, when fullness, distress, and belching began, coming about one hour after meals and relieved by belching; worse after eating pork, greasy foods, acids, and coffee, with burning in epigastrium also, coming on about one hour after eating, these symptoms lasting usually until the next meal and then relieved. May at times trouble her at night. Relieved by soda for perhaps half an hour, and sometimes by lying down. Worse after eating acids, acid foods, cooked meats, stews, etc. Has had regurgitation of small amounts of food for some time, coming on usually one to one-half hour after meals and are very burning; occasional eructation of a mouthful of burning watery material; has some "drooling" of saliva from the mouth at night.

In May, 1919, patient took two A. B. S. & C. pills. Two hours later began vomiting, then was chilly; had abdominal cramps all next day and fever up to 103° F. Pain settled in right side, and side was somewhat tender. Had fever for several days; in bed ten days. White-blood count, 11,000.

Appetite good, but more trouble if she eats a big meal. Stomach aches worse when constipated; definite tenderness in right iliac fossa. Test-meal shows total acid 52; free HCl, 18; total quantity, 30 c. c.; no food remnants.

Fluoroscopic examination shows no six-hour residue; head of meal in cecum; stomach, negative; no normal duodenal cap seen. Suspicious of ulcer. Diagnosis, indeterminate.

The patient was advised to have an exploration of the gall-bladder and the duodenum, with removal of the appendix.

Diagnosis: (1) chronic appendicitis; (2) duodenal ulcer, 50 per cent; (3) cholecystitis, 20 per cent.

At operation: The stomach was found smooth and normal; the gall-bladder small and normal, empties easily; pylorus, normal; duodenum, normal. No adhesions anywhere in abdomen or pelvis. A small pedunculated fibroid the size of a marble at the fundus of the uterus. Cecum was movable. Appendix, normal size entirely free, but shows some induration on being cut. Appendix removed; small fibroid removed.

In this case the failure to see a normal duodenal cap under the fluoroscope was strongly suspicous of ulcer of the duodenum, or of adhesions to duodenum. The normal acidity of the stomach as shown by the test-meal would be rather against ulcer, though the fact that she had relief from soda would indicate that the acidity was high at times.

We were disappointed in finding neither ulcer nor gall-bladder to account for the symptoms. We trust that the chronic appendicitis accounts for the cause of all her stomach symptoms. The small pedunculated fibroid does not seem a likely cause though fibroids have been mentioned in the literature as a cause of stomach symptoms.

The patient is improving now three weeks following the operation.

Case 3.—S. H., aged 29. Left inguinal herniotomy and appendectomy for acute appendicitis in 1918. Drainage a few days. In 1916 had severe attacks of epigastric pain coming on suddenly with nausea, slight chill and vomiting, doubling him up and shutting off his breath; was very sore for eight or ten hours; was sore in epigastrium for several days and felt rather weak for a while longer. Then felt well until 1918 when he had a diarrhea for about a week after eating bread supposed to be contaminated with shell gas; did not feel well until five or six weeks later, then felt well for three months, when he had sudden severe pain in right lower abdomen, with nausea, and vomiting, and chills.

Was operated on some forty-eight hours after the onset of the pain for acute appendicitis. In May, 1919, one year later, he first began to be troubled with some nausea at times, with fullness after eating and with some churning in the epigastrium. No definite qualitative food distress.

In July, 1919, he had sudden severe epigastric pain with nausea, but no vomiting, severe for half an hour and gradually was relieved, but left sore in right epigastrium for several days. Two months ago he had another attack of epigastric pain coming on suddenly

at night with nausea and vomiting, lasting for fifteen to twenty hours.

For the last six or eight months he has been having a hungry feeling in epigastrium and would eat lunch between meals; during the same time he has been eating a small meal with reasonable comfort, but with definite distress shortly after eating if he ate a full meal. He has been unable to eat meat, pork, greasy foods, potatoes, or pickles.

Appetite good; always hungry; weight fifteen pounds below average weight.

General examination, negative; abdomen shows definite tenderness in right epigastrium near costal margin.

Test-meal shows total acidity 76, free HCl, 56; total quantity 66 c. c.

Fluoroscopic examination of stomach shows vigorous peristalsis; no normal duodenal cap seen.

Diagnosis and conclusions: duodenal ulcer, 80 per cent; reflex stomach from chronic cholecystitis, 20 per cent.

History is somewhat mixed, but think it very strong for duodenal ulcer.

Operation and findings: Adhesions found between gall-bladder and duodenum, which also dragged on the transverse colon. An area in duodenum below pylorus shows slight stippling about three-quarters to an inch in diameter and had a soft-rubber-like feel, which seemed like a healed duodenal ulcer. Gall-bladder is moderately thickened, changed in color, but empties under pressure. It showed such distinct change, however, that it was deemed wise to remove it.

There were adhesions between sigmoid and cecum extending to the anterior abdominal wall at the site of the old appendectomy scar, and giving considerable kinking of the bowel. The adhesions were loosened, and the bowels seemed otherwise entirely free. It was deemed unnecessary to do any operation on the stomach or duodenum.

Diagnosis, pre-operative: (1) cholecystitis, chronic; (2) stomach adhesions; (3) duodenal ulcer.

Postoperative: (1) cholecystitis, chronic; (2) adhesions; (3) healed duodenal ulcer.

While there was slight stippling after rubbing the ulcer scar, it was our judgment that the adhesions which were old but thin left the small vessels on the scar surface when they were rubbed away, which caused the appearance of stippling, and that the scar was a healed ulcer scar. The adhesions between the gall-bladder and duodenum and the chronic cholecystitis were a sufficient cause for reflex stomach symptoms, especially as the test-meal showed a normal acidity. The adhesions and the ulcer scar would explain the *x*-ray findings. The sudden severe epigastric pain in 1916 was doubtless due to the ulcer, which was probably active then, and which had resulted in a local peritonitis leading to the adhesions.

The symptoms in this case were so mixed that it was almost impossible to make a definite diagnosis. The adhesions of sigmoid and cecum helped to complicate the picture.

This patient showed marked improvement following the operation.

Case 4.—G. J. L., aged 36. Following influenza for three months he first began to notice gas in the stomach and bowels with some belching. This has continued off and on since. Usually feels quite well before meals, or whenever stomach is empty. More distress after cabbage, pickles, fried potatoes; eructations of bitter material at times. Appetite good at times, at times poor. Bowels fairly regular. No severe abdominal colic. At times pain in right shoulder and between scapula and in neck. Is fourteen pounds under average weight. Complains of rheumatic pains.

General examination, negative; abdomen, indeterminate.

Test-meal shows total quantity 90 cc.; total acidity 54; free HCl, 42.

X-ray, fluoroscopic of stomach and duodenum; head of meal in ascending colon; cecum seems somewhat fixed; duodenal cap apparently fills well, but rather difficult to visualize; peristalsis moderate; stomach of fish-hook type; stomach, negative; duodenum, indeterminate, probably negative.

Dental examination showed two devitalized teeth which were abscessed; these were extracted.

Diagnosis: dental abscesses; chronic rheumatic infection; reflex gastric disturbances; chronic appendicitis, 75; chronic cholecystitis 20.

Since removal of the abscessed teeth he states that he has been free from rheumatic pains. Though the findings are not absolutely conclusive it is felt that there is sufficient evidence to warrant a laparotomy, exploring the abdomen, probably to find the appendix diseased, possibly the gall-bladder.

Operation and findings: Stomach, duodenum, and gall-bladder, normal. Appendix with cecum, in pelvis. Chronic obliterative type, reduced to one-half normal diameter. Appendix, removed.

In this case we were somewhat surprised to find no more than a chronic appendicitis. He showed marked improvement following the operation.

Case 5.—T. F. K., aged 25. Patient has had hysterical manifestations. In 1919 he first began to have fullness and distress in the stomach, coming within an hour after meals, with some belching, especially after greasy foods or fried foods and cabbage. Stomach is worse if the patient is constipated and also if nervous. Appetite good; sleep poor; five pounds underweight.

General physical examination, negative except questionable tenderness in right iliac fossa.

Test meal: total quantity 110 c.c.; total acidity, 76; free HCl, 59

Diagnosis and conclusions: Reflex gastric disturbance (appendix 50).

Exploration should be done in this patient.

Operation: Stomach and duodenum normal, gall-bladder normal. Omentum, adherent over the lower part of the colon, cecum, and appendix. Appendix showed definite signs of old trouble and was removed.

Postoperative diagnosis: (1) chronic appendicitis; (2) adhesions.

The adhesions pulling on the stomach may have been as much the cause of the reflex stomach symptoms as the appendix.

He was relieved of his stomach symptoms after operation.

Case 6.—L. E. C., aged 29. In June, 1918, he first had stomach trouble, fullness in the abdomen with distress, especially at night; worse after pork and greasy foods; after six weeks he entered the hospital for medical treatment for ulcer and stayed in bed four weeks

and was better. He was careful of his diet and was quite well until December, 1919, when he was nauseated and vomited onions and pickles, which he had eaten, he thinks, over forty-eight hours before. Had much constipation. Restricted his diet at this time and was better again.

In October and November, 1920, he had attacks of epigastric pains, coming at intervals of two or three weeks. Pains were very severe, came on suddenly, lasted two or three minutes, doubled him up and occurred every two or three hours for several times. Had no vomiting, but occasional nausea. No chills.

In February, 1921, first he noticed a gnawing in the epigastrium, coming on about three hours after eating and relieved by food. No eructations of burning watery material; occasionally a little belching.

Has lost six to eight pounds in the last two or three weeks. Appetite fair; sleeps fairly well; very nervous.

Complaints: dull pain in upper abdomen about one-half hour after each meal; gnawing pain about 4:00 P.M. each day, which is relieved by taking food. Soda gives relief. When he has severe pain it is knife-like in the region of the navel. The pain never radiates to the shoulder.

Physical examination: chest rather long; abdomen rather full; otherwise negative. Fractional test-meal shows total acidity varying from 22 to 84; free HCl, from 14 to 10. Wassermann, negative.

X-ray of stomach and duodenum shows no six-hour residue; head of the meal in the ascending colon, tail in terminal ileum. Stomach and duodenum negative.

Diagnosis: Reflex gastric disturbance from chronic appendicitis 90 per cent; duodenal ulcer, 20 per cent. Condition probably reflex, but we are unable to absolutely exclude ulcer. It is recommended that the patient be operated on, exploring the appendix and perhaps the gall-bladder, as well as the stomach and duodenum.

Operation: stomach, duodenum, and gall-bladder, normal; appendix bound down strongly in the pelvis, was removed with difficulty by skinning it out from its sheath. Good convalescence. Patient began to improve immediately following operation.

CASE 7.—W. W. K., aged 24. Well until February, 1919, when he first began to be troubled with "sour stomach," eructations of sour bitter material, watery mixed with some food, coming usually three-quarters to one and a quarter hours after eating. Some belching, which gives partial relief, especially from a sense of fullness. About four weeks ago he first noticed some crampy pain in the right epigastrium, coming two to three hours after food and relieved by eating. Occasionally he has had this before, but not regularly. More "sour stomach" after pork or greasy foods, tomatoes, canned corn, or salad dressing. Appetite good, but afraid to eat certain foods. Better if bowels move well.

In January, 1921, he had severe pain in the right epigastrium, coming on suddenly and doubling him up with nausea and vomiting. Some tenderness under the right costal margin for two days afterwards. Has not lost weight.

General examination: negative except for indefinite tenderness on the right side of the abdomen; urine, negative.

Test-meal: total quantity 120 c.c.; total acidity, 62; free HCl, 42; no food remnants.

X-ray of stomach and duodenum: no six-hour residue; stomach, negative; duodenum cap shows deformity, persisting on re-examination under belladonna, suspicious of ulcer, but may possibly be due to adhesions.

Diagnosis and conclusions: duodenal ulcer, 75 per cent; reflex gastric disturbance (gall-bladder or appendix,) 75 per cent.

The history is not altogether conclusive, but is very strong for a double lesion. It is recommended that he be operated on, exploring the appendix, gall-bladder, stomach, and duodenum, and then that he be put on medical treatment for ulcer after operation if both conditions are found.

At operation the gall-bladder showed some moderate, old trouble; was slightly changed in color, but was free from adhesions; of normal size; emptied easily and refilled in a few minutes. A stippled base of an ulcer showed half an inch below the pylorus on the anterior wall of the duodenum about half an inch in diameter. It gave a slight feel of thickening between the fingers. There were slight gauze-like adhesions about it. The appendix showed adhesions of its middle two-thirds to the cecum and to its mesentery; was about normal in size except the outer third, which was a little smaller than normal and a little firmer. Ulcer area was sutured over with two layers of stitches; appendix removed; gall-bladder was not disturbed, as it seemed quiescent and not much changed from normal.

The patient showed distinct improvement following the operation, and was put on an ulcer regime during the healing of his ulcer.

CASE 8.—J McE., aged 56. Patient states that he began to have pain in the abdomen in 1916 and has had some pain, not very definitely localized, off and on since.

About eight months ago he first began to be troubled with anorexia, gradually growing worse, the last five or six months especially, and has been troubled with belching at times. He first noticed distress after meat nine or ten months ago, and has eaten no meat the last three or four months, takes eggs, cereals, soups, etc. Has occasional nausea and vomiting, and thinks there is a little blood at times. Normal weight, 148 lbs.; present weight, about 110 lbs.; has lost 15 pounds or more in the last three months.

Chief complaint: weakness and loss of weight and stomach symptoms.

Physical examination: definitely undernourished and moderately emaciated. The abdomen shows spleen palpable at costal margin, also a tender mass in the upper right abdomen extending about 8 cm.; below the costal margin: rectal examination, negative. Test-meal: total quantity, 60c, total acidity, 56; free HCl, 21; no food remnants.

X-ray of stomach shows inability to fill satisfactorily in prepyloric area; stomach otherwise negative; duodenum negative.

Findings and diagnosis: The history is not definitely determinate. The marked loss of weight, the fluoroscopic examination of the stomach, and the indefinite stomach symptoms, together with their period of duration, might point to carcinoma of the stomach, though the normal acidity is rather against it.

Diagnosis: carcinoma of the stomach, over 50 per cent; enlargement of liver; enlargement of spleen. Operation advised.

Operation and findings: no evidence of carcinoma or

of ulcer; stomach, normal; duodenum normal; gall-bladder, normal and empties easily; liver, enlarged and shows the fine markings of cirrhosis,—cirrhosis in the stage of hypertrophy; spleen, enlarged four times; appendix, normal with no adhesions.

To furnish a greater return blood flow from the liver, I used a method which I thought of fourteen years ago, but for which I had not found a patient before on whom I could use it. I took a fairly broad, rather thin abdominal gauze pad and introduced one edge as far back as I could between the liver and the diaphragm, and sutured it there with catgut, beginning well toward the left end of the liver and inserting others along the roots of the coronary ligament well over to the right side and smoothed out the gauze down and well back over the right half of the liver. A second row of catgut stitches was used to fasten the anterior portion of the gauze pad along the anterior margin of the liver from one side to the other. This fastened the gauze smoothly over a wide area between the liver and the diaphragm with the idea that the irritation of the gauze would start granulation tissue both on the surface of the liver and on the corresponding under surface of the diaphragm, so that when the gauze was removed the two would soon grow together and offer an abundant development of veins to carry the blood-stream around the obstruction in the liver itself. One corner of the gauze pad was brought out of the upper angle of the abdominal wound, and the whole pad was removed on the tenth day.

In addition to this procedure, the usual device was used. The omentum was turned upwards and tucked in between the peritoneum and the inner sheath of the recti muscles on both sides, and sutured into place.

This patient began to gain in weight soon after he was able to be out of bed, and he stated that he felt better than he had felt before for many months.

The normal acidity shown by the test-meal is not incompatible with carcinoma of the stomach, though it is not usual. The *x*-ray findings seemed to point to a carcinoma in the pyloric end of the stomach, while the occasional blood in the vomitus seemed to confirm the diagnosis. However, cirrhosis of the liver occasionally gives blood in the vomitus from dilated veins, so the pre-operative diagnosis could not be conclusive.

Case 9.—W. P., aged 24. About January, 1919, he first began to have pain in the epigastrium of a dull character and quite constant, but better for fifteen or twenty minutes after meals. No other food relation or kind of food makes any difference. Worse the last two months. No nausea or vomiting. Worse if he eats heavy meals. One month from the beginning he had a rather severe epigastric pain, lasting three or four hours, somewhat cramp-like, walked around, and did not lie down. No nausea or vomiting; and no diarrhea. Since then he has had two or three similar attacks. Has some history of cough, and is twenty-five pounds under weight.

Physical examination largely negative except for chest and moderately enlarged cervical glands; urine, negative; Wassermann, negative; tonsils, enlarged.

Test-meal: total quantity, 25 cc.; free HCL, 75; total acidity, 94.

X-ray of stomach and duodenum; hyper-peristalsis; otherwise negative. *X*-ray of chest suggests an old inactive tuberculosis.

Diagnosis and conclusions: apparently no active tuberculosis at the present time; heart, negative; am unable to make a diagnosis of an organic abdominal lesion, nor have we sufficient evidence to warrant operation. (Tonsils have been removed.)

On a subsequent examination a small epigastric hernia was found slightly larger than a bean, and slightly tender under pressure at the time. While the hyperacidity, 78 and 94 per cent, put this patient into the possible ulcer class, the symptoms were not characteristic and the *x*-ray findings were negative. Feeling that the epigastric hernia might be the factor causing the reflex stomach symptoms, operation was advised, and was performed under local anesthesia. Following the operation the patient was free from epigastric pain and distress, and under a general regime of feeding began to gain weight.

The effect of these small epigastric fat herniæ is curious. We have had quite a number of them, and we have watched for them with interest. Occasionally they give rise only to local tenderness or to no symptoms at all, but usually they give rise to reflex gastric disturbances, which are quite puzzling, as the cause of the symptoms is often overlooked in the preliminary examination. These symptoms vary from mild irregular gastric symptoms to definite periods of rather severe gastric disturbances and, occasionally, of great intensity. One case in my early years of practice was of a man who was a painter of white beds, in a factory. For ten years, off and on, he had had gastric disturbances, sometimes apparently connected with his food and sometimes not, with nausea at times and sometimes vomiting. He called me in the middle of the night. He was in great epigastric pain and had severe paroxysms of vomiting. Because of the painting I made a careful search for signs of lead poisoning. There was no lead line in the gums, no muscular spasms, no tremors, no paralyses, nor muscular wasting. In the course of my examination my finger rested upon a small soft nodule in the epigastrium near the midline, which started again the severe wretching, and he brought up a little watery mucus with a few fine streaks of blood. He was in great distress until I operated on him about an hour later, and removed a subperitoneal hernial tab of fat, projecting through a slit at one side of the linea alba. I heard from him a year later. During this time he had had no recurrence of his gastric or abdominal symptoms.

By the curious law of chance, ten days later I saw another patient, a big, strong man, with epigastric pain, vomiting as though he would turn himself inside out, and the vomitus I saw was streaked with blood. It looked like thin tomato soup. The only cause I could find was a

small, epigastric, fat hernia. In this case I was able to reduce it. His symptoms ceased at once. As he refused operation, and I never saw him again, I do not know his subsequent history.

With the reflex stomach, the symptoms sometimes so closely simulate those of ulcer of the stomach or duodenum that a definite diagnosis cannot be made before operation. We have the pain in the epigastrium with its limited field of radiation; gas with a sense of pressure, relieved by belching; some eructations, waterbrash, vomiting of sour, acid, or bitter fluid, burning at times; and the time of pain or other symptoms; their regularity and the means by which they may be relieved may be closely simulated. We may have the soda relief and the food relief. We may have the pain coming on one to five hours after a hearty meal, and the symptoms increasing in intensity until vomiting or soda or food brings relief, and the symptoms may have a tendency to repeat themselves daily, during the period of the attack, with regularity after meals.

However, there are usually some variations when the symptoms are reflex stomach symptoms. The seasonal onset of the attacks so common with the early ulcer history, of Spring and Fall, are absent, as a rule, with the reflex stomach. The time of the pain or other symptoms is apt to be less definite; the regularity of the pain or other symptoms is apt to be less certain.

Again, the onset of the attacks, the results of treatment during an attack, and the termination of the period of the attack are different. The indiscretion or the chain of circumstances which determines the onset of the symptoms which accompany an ulcer can usually be determined pretty clearly. The condition usually yields noticeably to treatment, and the end of the period of attack can usually be foreseen. With the reflex stomach the onset of the attack often comes suddenly from no known cause. The attack runs its course in spite of treatment, and the termination of the attack comes without any special relation to the treatment used.

When we consider the two sets of conditions there appears to be good grounds for these differences. In the ulcer cases the lesions are in the stomach or duodenum. They modify the digestive secretions and the peristalsis quite directly, and are in turn under the definite influence of these changes. In the reflex cases the lesions lie outside of the stomach, they become active through no direct influence from the stomach and from causes often entirely outside of the stomach, but when they are active they telephone to the stomach and the stomach is influenced to misbehave. It cannot be expected that this misbehavior will show the seasonal changes of the beginning ulcer cases, nor quite so definite a food relation. So the history of these cases is quite apt to be at variance with an ulcer history at some points, if it is carefully taken. The regular curve of an ulcer history is pulled out of line.

Again, somewhere in the history there is usually some occurrence, some train of symptoms, which points for a moment to some other direction than the stomach, some fleeting jaundice, some pain or discomfort reflected into the lower abdomen, or some chain of symptoms long forgotten. The physical examination is not quite conclusive. Signs are elicited a little too high and a little too far to the right, or a little too low to be satisfactory for ulcer, or the finger may run unexpectedly upon a small, soft, hardly distinguishable mass near the midline.

The test-meal does still more. In many of these cases the acidity runs fairly high, but if a fractional test is made it will be found that after a time the acidity reaches its height and in the subsequent quarters of an hour it begins to decline, often almost to normal, if not fully to normal. In the ulcer cases, the acid curve runs up also, but it tends to stay high until the next meal.

The *x*-ray examination is of great value here also and the information gained under the fluoroscope exceeds by far any which can be gained by pictures. The opaque meal can be molded under the eye. The tricks of peristalsis and of apparent defects can be watched. Defects which are permanent can be separated from those which are for the moment only. Defects which are permanent point to a lesion at the site of the defect in the stomach or duodenum. Defects which are permanent, but which are not accompanied by an ulcer or cancer history, may be due to adhesions, to tumors pressing from the outside, or to a large firm gall-bladder impinging upon the duodenum.

DISCUSSION

Dr. R. E. Weible (Fargo): I once heard a noted surgeon speak on the stomach as the megaphone of the abdomen. As I thought this point over it seemed to me that the stomach is the megaphone of nearly all of the organs of the body. If it does not shout loudly, at least it can be heard in most diseases. When I tried to determine what diseases produce reflex stomach symptoms I found myself in some confusion. Such

diseases as migraine, Addison's disease, the vomiting of pregnancy, acute malaria in young children, the acute onset in infectious diseases—all give rise to acute stomach symptoms, but these are obviously toxic. I was not sure where to put the stomach symptoms of angina pectoris and sea sickness, nor where to put the gastric crises of tabes or the gastric symptoms that we see in pneumonia and in diaphramatic pleurisy. Are they really an overflow of irritation along the vagus, or are they reflexes? The one condition that we have to separate from these cases, which Dr. Mann has mentioned and which should not be forgotten, is gastric neurosis. Two days ago I saw a man who had been in bed at times, off and on, for a year. He has had his tonsils removed and his appendix taken out, he has consulted specialists at most of the clinics of the Northwest, and he is having stomach trouble which is very similar to that in reflex stomach due to appendiceal disease.

Why do some people have gastric reflexes with a pathologic condition in the abdomen, and other people not? I explained this to myself by dividing these cases into the two classes: one vagotonic, the other sympathicotonic, and in all probability it is the vagotonic class which gives rise to our reflex stomach.

Dr. Mann (closing): The whole point is, I think, that in these troubles the cause is outside of the stomach. The process begins with no relation to what is going on in the stomach, or it begins with no reason that we can clearly see. The stomach is the first large portion of the intestinal tract, and when the gallbladder is upset it telephones to the stomach—"Please, do not take in any more food, it distresses me." As the stomach is very accommodating it empties itself.

CLINICAL TEACHING AT THE MEDICAL SCHOOL OF THE UNIVERSITY OF MINNESOTA

By E. P. Lyon, Dean
MINNEAPOLIS

In view of the widespread interest in the Medical School of the University of Minnesota exhibited by the medical profession, the following brief account of present clinical teaching has been prepared.

In accord with the practically universal practice in this country the first two years of the course are almost wholly devoted to the preclinical sciences. In the sophomore year there are courses in physical diagnosis, with some dispensary practice, and in bandaging. The last two years are devoted to clinical subjects.

Two years ago the school adopted a new arrangement of clinical studies which, from a pedagogical point of view, eliminates the old division into junior and senior subjects. Instead, the six quarters' work constituting these years are now divided into three periods of two quarters (six months) each, known, respectively, as the *introductory, intermediate,* and *advanced clinical* periods. An account of this plan was published in the *Minnesota Medicine* for April, 1919.

In outline the three periods of study are as follows:

1. *Introductory Clinical Period.*—Didactic lectures in medicine, surgery, and obstetrics; laboratory course in clinical chemistry and microscopy; dispensary clinics in medical diagnosis; diagnostic clinics in sections (in small part, class clinics are used); and six hours' elective work for each student each week. The hospital section clinics are concentrated for division "A" at the Minneapolis General Hospital; for division "B" at the City and County Hospital, St. Paul. Students have no responsibility for patients in this period.

2. *Intermediate Clinical Period.*—Didactic lectures on the specialties; dispensary in specialties; and, most important, clinical clerkships, with individual examination of patients, history writing, etc. The work during this period is concentrated at the University Hospital. This saves time on the student's part. At the University Hospital Teaching Fellows or other instructors are provided in immediate supervision of the clerks, and a carefully worked out scheme of instruction is arranged. Each student gets eight weeks in medicine, eight weeks in surgery, four weeks in pediatrics, and four weeks in obstetrics. He has certain responsibilties of a limited character for the care of patients.

It will be noted that this six months period includes the last three months of the "Junior" and the first three months of the "Senior" year under the traditional class nomenclature.

3. *Advanced Clinical Period.*—During this last six months of the course most of the students hold "student internships." They live at the hospitals to which they are assigned, coming to the Campus only two afternoons a week for certain advanced or special lectures. Inasmuch as the University Hospital is devoted largely to

the clerkship instruction it can be used to only a limited extent for student internship. The city hospitals and their staffs furnish this all-important instruction.

In the two municipal institutions during the present year forty-six of the sixty-four seniors will receive the last six months of their medical education. They live at the hospitals, are a part of the hospital organizations and are responsible as junior interns for the care of patients. It will be seen, therefore, that the two municipal institutions occupy a very large place in our present plan of clinical instruction.

The faculty believes that the student internship system, which is a purely Minnesota educational plan, is proving a success. It believes that a better sequence of responsibility and initiative on the part of students is secured than under the old plan of rotating section clinics. It appears from reports received from various sources away from the Twin Cities that our men on finishing the traditional four years course (at which time they get the degree of bachelor of medicine) are better acquainted with hospital procedure and better able to assume the duties of the required graduate or regular internship than the graduates of other schools. Our men know how to do things and are not afraid of responsibility. If this proves to be a fact, it appears probable that the student internship system will be widely adopted.

The thanks of the University are due to the St. Paul City and County Hospital and to the Minneapolis General Hospital for making the student internship plan possible. The superintendents of these hospitals have entered heartily into this important educational experiment. It has been harder perhaps to get the hospital staffs to realize that in teaching the dozen men assigned semi-annually to each institution they are teaching the most important part of the curriculum,—the last six months of the "senior" year. The teaching must be for the most part individual and practical. There is none of the glamor and excitement of the old-fashioned amphitheatre clinic. But it counts a good deal more in making good physicians. As the staff members come to realize that interns are students, much more than assistants, the obligation of teaching both the student become clearer.

Gratifying progress has been made both at the Minneapolis General Hospital and at the St. Paul City and County Hospital in organizing group exercises for the student interns. This is a difficult task which the respective supervisors of instruction at these institutions, Drs. Ulrich and Colvin, have in charge.

The University has assigned to the Minneapolis General Hospital teaching fellows in medicine, surgery, pediatrics, and in eye, ear, nose, and throat, respectively. Later there will be one in obstetrics. From the hospital standpoint these young physicians are house officers, superior to the interns and in immediate charge of the various hospital services. From the University standpoint these men are graduate students, but also teachers having responsibility for the supervision of student interns and for assisting in formal clinics. This plan is new, but promises well.

It will be seen from the foregoing that the Medical School carries on three important forms of teaching at the city hospitals:

1. *Group clinics for juniors in the introductory clinical period.*—These exercises are scheduled and the instructors meet these groups at regular hours. The survey committee received and published a wrong impression on this subject. Our instructors at the Minneapolis General Hospital are as regular in meeting their classes as those at the University Hospital.

2. *Student internships.*—This is largely individual instruction conducted in connection with the actual work of the hospitals.

3. *Graduate teaching to a limited number of Teaching Fellows.*—All students receive in the intermediate period some valuable instruction at the Hospital for Crippled and Deformed Children at Phalen Park and at Glen Lake Sanatorium. A small amount of student internship work is also done at these institutions.

The following table shows the actual distribution of undergraduate clinical teaching for the fall quarter of 1921. This varies somewhat from quarter to quarter. The unit used is the student-hour. The calculation is made by multiplying the number of weeks in the quarter by the number of hours a week in a given clinic and multiplying this result again by the number of students in the group.

DISTRIBUTION OF CLINICAL TEACHING, FALL QUARTER, 1921

UNIVERSITY HOSPITAL

	Student Hours
1. General clinics (whole class) Medical clinics for juniors and seniors, respectively; 1 hour weekly, each group	1,551

2. Clerkship and other section clinics; medicine (including nervous diseases) 2928; surgery, 1,000; pediatrics, 264; obstetrics, 264; eye, ear, nose, and throat 117 student hours 4,573
3. Pediatric diagnostic clinic 385
4. Obstetric deliveries and autopsies (no time credit).
5. Student internship, two students at the University Hospital in a rotation including Glen Lake and Phalen Park .. 660
6. Other electives; medicine 105

Total 7,274

UNIVERSITY DISPENSARY

1. Junior diagnostic clinics; medicine 2,700; surgery 363, student hours 3.063
2. Clerkship division; section clinics in specialties 957
3. Electives; medicine 561; surgery 260; pediatrics 33, student hours 854

Total 4,874

MINNEAPOLIS GENERAL HOSPITAL

1. Clinics for juniors, division A, in sections. Two clinics a week, one and a half hours each, respectively, in medicine, nervous and mental diseases, surgery, pediatrics, contagious diseases and obstetrics, average of eight students in a section 1,584
2. Dispensary clinics; pediatrics, five students in section, four and one-half hours a week; obstetrics, five students in section, nine hours a week 742
3. Obstetric deliveries and autopsies (no time credit).
4. Student internship, 10 students, 30 hours a week, all services 3,300
5. Other electives, medicine, surgery, and pediatrics 396

Total 6,022

CITY AND COUNTY HOSPITAL

1. Clinics for juniors, division B in sections; two clinics a week, one hour and a half each, respectively, in medicine, nervous and mental diseases, surgery, pediatrics, contagious diseases, and obstetrics; average of nine students to section 1,782
2. Student internship; twelve students, 30 hours a week all services 3,960
3. Obstetric deliveries and autopsies (no time credit).

Total 5,742

HOSPITAL FOR CRIPPLED AND DEFORMED CHILDREN

PHALEN PARK

1. Orthopedic lectures and clinic 308
2. Student internship, one student at Phalen Park in rotation with the University Hospital and Glen Lake 330

Total 638

GLEN LAKE SANATORIUM

1. T. B. section clinic, clerkship division . 77
2. Student internship, two students at Glen Lake in rotation with University and Phalen Park 660

Total 737

TREATMENT OF VISCEROPTOSIS*

By Warren A. Dennis, M. D., F. A. C. S.
ST. PAUL

This paper is perhaps open to two criticisms: (1) that it is written by a surgeon on a subject not treated as surgical; and (2) that it offers nothing new on the subject. To avoid argument I commence by anticipating both and recognizing their substantial justice. My defense is that in the past the subject has too often been regarded as surgical, and, when not so regarded, very generally neglected, or treated in a half-hearted or inadequate manner; in the latter instance, at least, the patient derives little or no benefit, and the physician receives and deserves little credit.

So considerable a percentage of all persons, especially of the female sex, who seek the advice and aid, whether of physician or surgeon, are suffering chiefly from visceroptosis, it seems

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worth while to consider whether there are not within the reach of all of us remedial measures of sufficient simplicity and efficiency to justify a renewed consideration of the subject.

It is probably true that most of the victims of this condition will fail under any form of treatment to attain a physical condition equal to that of their more fortunate sisters, but so much can be done that an effort seems well worth while.

As is well known, Glenard's disease, or visceroptosis, is usually met in persons, most often women, with a definite type of build, so definite and well recognized that it is commonly referred to as the "habitus enteropticus." These persons have a long and narrow chest with an acute intercostal angle, and when the condition has fully developed, a prominent lower abdomen associated usually with a flattening or even a concavity of the epigastric region. The appearance is generally and very well described by the inelegant term "pot-bellied." Constipation is an almost constant accompaniment; digestion is attended by distress and gas; and headaches are common and often severe. Many of these patients suffer periodically from what are known as bilious spells. They are likely to have a sallow complexion and to complain of a constant feeling of lassitude. Detailed description is unnecessary. The picture is only too familiar to all.

Text-books describe two types of enteroptosis, the congenital and the acquired. To the first class belong all those cases placed under the head of "habitus enteroptoticus." The acquired form is chiefly seen in women who have borne children, often many of them, and in whom the increased fat put on incident to the pregnancy is often succeeded by a great loss of adipose during or following the lactation period. My impression is that most of these cases also have a decided leaning toward the type of structure denominated "habitus enteroptoticus." Certain it is that this is exactly the class of cases that put on most weight during pregnancy and that are most likely to lose it sooner or later following delivery. An increased deposit of fat in the mesenteries and supports of the organs during gestation causes a certain amount of stretching, and its subsequent absorption leaves them longer and more relaxed than before. In addition to this the abdominal wall which has been stretched and later relaxed during the same process, no longer affords the same support that it did before, and an increased proportion of the weight of the abdominal organs is left to the support of the stretched and weakened ligaments.

The symptoms appear to be due to four principal factors: (1) the actual sagging of the organs, (2) loss of muscle tone, (3) constipation, and (4) toxemia. All are so intimately related and interdependent that a concise discussion of each separately is hardly practicable or desirable. When examined under the fluoroscope it is found that the greater curvature of the stomach is at or near the symphysis. This position is due in part to loss of normal support, but also in large measure to lack of the normal tone in the musculature of the stomach itself. The necessary labor of such a stomach in empting itself through the pyloric orifice, which, because of its short firm supports, sags very little, if at all, is therefore greatly increased, with resulting added load to its atonic musculature. The splenic flexure, like the pylorus, is firmly fixed and rarely descends, and hence the transverse colon, which is prolapsed to the bottom of the pelvis, is obliged, in emptying itself, to raise its constipated load nearly or twice the normal height, with resulting fatigue and loss of tone.

That constipation is an extremely common condition in the human female will hardly be challenged. I am convinced that its beginning is almost invariably chargeable to habitual neglect promptly to respond to nature's call, and that this same neglect is a large factor in its perpetuation. Its correction in cases of visceroptosis is an essential of satisfactory treatment and can usually be secured by proper dietary measures. The directions given are the following: baked apple, apple sauce, stewed prunes or stewed rhubarb three times a day, twelve to fifteen glasses of water or milk a day, and two tablespoons of bran, cooked or raw, to be eaten with the usual breakfast food. In case of necessity this amount of bran is eaten two or three times a day. Two glasses of water are to be drunk hot on rising in the morning. Strict injunctions are given that the call of nature must never be neglected or postponed. It is truly surprising to observe what a large proposition of cases of constipation, whether in cases of visceroptosis or not, are relieved by this simple regime conscientiously carried out. In case these measures do not produce the desided effect two ounces of sweet oil are injected into the rectum at bed time and allowed to lie there till morning.

The body fat and general nutrition are increased chiefly by the drinking of milk. If in the

individual case, as is not infrequently true, sweet milk produces gas or tends to constipate, lactone buttermilk is substituted. In fact it is perhaps better in all cases in which there is not distinct repugnance toward it, since its laxative tendency has long been recognized, whatever additional virtues it may have. Two glasses of milk are taken between meals and at bed time, and the remainder with meals. Butter, cream, and bacon are given freely for the same reasons as the milk.

The bed used by the patient has its foot elevated about ten inches, so that gravity operates to return the prolapsed organs to their proper level. It is occupied, not only at night, but for half an hour to an hour after each of the three regular meals. In consequence of this position the stomach musculature, instead of being partly expended and fatigued in supporting the contents of the organ and lifting it against gravity to the pyloric outlet, is engaged solely in the activities of digestion. Patients recognize at once the relief afforded by the position during the digestion of a meal. Over filling the stomach is interdicted, but is not often seen since the sharp edge of a too healthy appetite, itself a rarity in these cases, is removed by the milk or lactone taken between meals.

On this regime one sees cases of constipation of long standing relieved. Evacuations become regular without the use of cathartics. When this result is attained the toxemia disappears. I believe it is unnecessary and undersirable to keep these patients continuously in bed. When the stomach, after a full meal, is relieved of the necessity of supporting the weight of that meal, and its entire force is exercised in the movements of digestion, it is surprising to observe with how much less discomfort that function is accomplished. Subsequent fluoroscopic examination of the patient shows the greater curvature of the stomach at a level two or more inches above that previously occupied. Whether this result is due more to the shortening of the supporting ligaments from relief of strain and deposit of fat or to the improvement in the muscle tone, I am unable to say, but I believe that in the case of the stomach, at least, it is chiefly due to the latter cause.

Special corsets and other supports have occasionally been employed, but not with great satisfaction. The best supports are the patient's own tissues, and in most cases these will be found adequate.

Goldthwaite and Martin have recommended certain exercises for the widening of the acute costal angle and expansion of the lower chest, thus increasing the amount of room in the upper abdomen, and Coffey has sought the same end by surgical measures. It is difficult, however, to believe that there is actually insufficient space; at all events it is not apparent with the patient in the Trendelenburg position, either under the fluoroscope or on the operating table. Under these circumstances the stomach almost invariably occupies its normal position, even though in the former case it contains a quart or more of barium mixture.

We have been told that the abdominal contents are like fluid in a closed vessel and that, therefore, gravity plays no part in determining the position of the various organs; but this simple fluoroscopic test showing the changes in position of the stomach with the changes in the body position would appear to be a sufficient refutation of this teaching.

It will be observed that the recommendation of surgical measures in the treatment of visceroptosis has been entirely omitted. I have never looked with favor on surgical treatment for this condition per se. It goes without saying that a ptosis case may have an acute appendicitis, a perforated ulcer or gall-stones, and that it then requires the treatment appropriate to those conditions in any type of build. Further, a kidney may be so prolapsed as to cause kinking of the ureter with resulting colic or infection; nephropexy is then indicated in the hope of preserving the functional integrity of the organ; but in all these cases, naturally, the relief afforded is to the single condition and not to the ptosis in general.

It is unnecessary to discuss in detail the various operations that have been employed to support or eliminate the prolapsed and atonic organs, such as gastroplication, gastropexy, omentopexy, cecopexy, colectomy, ceco-sigmoidostomy, etc. Suffice it to say that each one either violates the principle which forbids the fixation of an organ whose wall is normally free, or relies for support upon a tissue not strong enough nor intended to give it, or invites other complications more serious than that for which the operation was undertaken.

The chief advocates of these measures have been Rovsing and Lane abroad, and Coffey in this country. In one of his most extensive papers on this subject, published nine years ago, Dr. Coffey recognizes the dangers associated with the addition of these conditions to the field of

general surgery, chiefly because of the abuses that might ensue at the hands of unscrupulous men. Whether or not these fears have been realized I will not venture to say, but if one may judge from the paucity of the literature on this subject in recent years and the testimony of one's surgical friends, I suspect that not only the unscrupulous surgeon but the man of experience and judgment, as well, is less enthusiastic about this class of work than he was a few years ago. And after all, if surgery is to be employed at all I am not sure that there is not some wisdom in the facetious suggestion of one of my friends, that, since we cannot satisfactorily replace and fix all the prolapsed organs, a rational plan would be to cut the supports of those still in place and let them down with the rest. Relative positions would then at all events approximate the normal.

To summarize: I shall not attempt to make a statistical report on the results of the treatment outlined. No formal study of the condition had been planned and the observations and recommendations made may be regarded simply as the by-product of a surgical practice. Gains in weight vary from five to twenty pounds. A gain of even five pounds in these cases usually implies relief from the constipation and toxemia and a great diminution in the abdominal discomfort. It would appear that in these cases the improvement is due more to increased muscle tone than to bettered supports.

It would, of course, be folly to maintain that every case of ptosis can be relieved from symptoms by the simple measures advocated, but I believe that, in the absence of other organic conditions, the great majority will be if they show willingness and perseverence in following instructions.

DISCUSSION

Dr. W. F. Sihler (Devils Lake): This subject is becoming very much more interesting to the general practitioner because we see that those who are doing the greatest amount of work along this line are securing definite results; they are really getting somewhere. Up to a short time ago we were in doubt as to whether ptosis was a complete entity in itself, or whether it was purely a symptom. The papers read this afternoon show us that it may be one or it may be the other.

In looking over the literature on this subject one is amazed at the diversified opinions given by the various authorities as to the true cause of this disease; and, as a consequence, the line of treatment must necessarily be just as diversified. Some tell us that from 90 to 95 per cent of these cases are embryological and due to lack of proper fusion or due to fusions that take place which prevent the proper rotation, descent, and suspension of the abdominal organs. Stellar is one of these, and he states that this condition is always associated with peculiar types,—tall individuals with narrow thorax, with flabby muscles, with deficiency in fat, with stigma of neurasthenia or floating tenth rib. Harris will go further in the same line of belief and will make a diagnosis of nephroptosis, in women especially, if given a certain set of mathematical figures.

Riegal maintains that the condition is due to an alteration in the pressure of the thoracic cavity and the abdominal cavity. There must be an increased thoracic pressure or a decreased intra-abdominal pressure, as due to the weakening of the muscles, or an alteration of the shape, as due to pregnancy and other conditions bringing about such contingency.

Victor believes that the fundamental cause of this condition is due to inability of the abdominal muscles to support the abdominal viscera and intra-abdominal pressure, which is very considerable in the upright position; and he thinks any condition which will increase the instability of the body, such as marked straightening of the thorax, marked anterior convexity of the lumbar thoracic segment of the spine, or marked tilting forward of the pelvis, will bring about this condition.

Keith concludes that the diaphram is the causative factor and that there must be a loosening of the thoracic attachments or there must be a weakening of the abdominal muscles to produce a sagging of the abdominal organs, and that the mesenteric attachments are purely secondary.

These are only a few of the later conclusions found in the literature and could be multiplied, I presume, several times, but it simply goes to prove my contention that we are far from knowing the real cause of this condition. Consequently, it follows that we must be just as much at sea in regard to our line of treatment. The papers we have heard today in the line of treatment prove this latter assertion. However, I was very much pleased to hear a surgeon of the ability of Dr. Coffey take such a broad view of the subject and be willing to modify his treatment as to his conception of the cause. He emphasizes the importance of the medical treatment, and I believe, personally, that in the vast majority of cases this is where we are getting our real benefit. There is a limited number, without any doubt, wherein, from lack of proper development or due to inflammatory conditions, surgery will be required. Also, on the other hand, there is a greater number which must be treated solely from a medical standpoint, as described by the authors.

There is very little I can add in discussing this paper in the matter of treatment in addition to what has been offered other than to state that our best results will be obtained from a personal study of each individual case, ascertaining, if possible, the true cause and then outlining a treatment suitable.

Dr. E. P. Quain (Bismarck): For several years I have been much interested in the subjects presented by Dr. Coffey and Dr. Dennis and find this discussion for that reason to be especially instructive. For practical and therapeutic purposes ptosis of the right colon, it seems to me, may be divided into three classes or groups.

First, those cases in which the cecum and lower half of the ascending colon only are pathologically out of place.

Second, cases in which the entire right colon, including the hepatic flexture, are abnormally ptosed.

Third, cases that have pronounced membrane and adhesion formations over the colon. This includes both the evolutionary membranes first described by Lane and the true adhesion formations following infection of the bowel wall.

As to treatment, I feel somewhat more radically inclined than either of the essayists. In the first two types referred to, after measures based on posture, diet, binders, and various external appliances have proven inefficient, much benefit may be derived from surgical treament, *i. e.* fixation of the pathologic part of the colon. In the third group, when there has been a bacterial infection of the entire bowel wall, nothing short of colectomy will give permanent relief to the patient.

In regard to the statement made by Dr. Coffey concerning "chronic appendicitis": I agree with him fully. I believe the time will soon come when we shall no longer diagnose and operate for "chronic" appendicitis. Most cases of chronic and recurrent pains in the lower right abdomen and not associated with signs of fever or infection are apt to be due to visceroptosis and especially cecum mobile. Appendectomy in such cases may, however, give relief to the patient, provided the operation has been made in such a way as to cause a fixation of the cecum.

A METHOD FOR THE MODIFICATION OF COW'S MILK*

By F. W. Fergusson, M. D.
STARKWEATHER, NORTH DAKOTA

It is altogether likely that at some time or other every practitioner has harbored the idea that, failing mother's milk, the only proper food for an infant is cow's milk, and that it is the simplest thing in the world to feed an infant successfully if we only remember this rule. After a very little experience and our belief has been badly shaken, it is with fear and trembling that cow's milk is used, and on the first sign of the milk disagreeing recourse is taken to some patent food or to condensed milk.

It is not my idea to pass an everlasting condemnation on these methods of infant-feeding for we all know they have been used successfully. It is, however, the abuse and not the proper use of these foods which has led to disastrous results. When they are used with an intelligent appreciation of their composition, and also of the ages and conditions for which they are suitable, they no doubt have their place. However, it is no less true that as a general statement, there is no patent food on the market which will take the place of good cow's milk as a diet for an infant that, for one reason or another, has been deprived of mother's milk, and, further, that a large amount of suffering and misery has been brought upon infants through the indiscriminate use of these patent foods.

In order to successfully modify cow's milk one must have a fair knowledge of the composition of cow's milk, as well as that of human milk.

It takes only a few seconds to obtain the knowledge that human milk contains proteids, 2 per cent; fat, 3.5 per cent; and sugar, 7 per cent; while cow's milk contains proteids, 4 per cent; fat 3.5 per cent; and sugar, 4 per cent.

We see at a glance that the fat content is equal in the two milks, that the sugar content is nearly twice as great in the human milk, and that protein is twice as high in the cow's milk.

With these few facts constantly in mind we can modify cow's milk to suit nearly any infant. A little experimentation as to the amount of the feedings, the feeding intervals, and the sugar percentage may be necessary in some cases, but a little perseverance will usually be rewarded with a baby that is gaining in weight.

The following things are to be taken into consideration when using cow's milk:

1. Amount of whole milk needed and how calculated.
2. Dilutents and amounts necessary.
3. Number of feedings in twenty-four hours.
4. Amount of each feeding.
5. Amount of sugar and how calculated.

Taking each point up separately we first calculate how much whole milk we shall need.

In calculating the amount of whole milk necessary it is important to remember that the calculation in under-weight infants must be based upon what the baby should weigh, and not what it actually does weigh.

It has been found that giving 1½ ounces of whole milk per pound of baby-weight is a very

*Presented before the Devils Lake (N. D.) District Medical Society, Jan. 16, 1921.

accurate way for providing the required amount of protein and fat.

Point 2, Dilutents and Amount Necessary.—What dilutent is the best? In theory there is one and only one ideal dilutent, which is whey. Whey is nature's dilutent for milk, and milk may be considered a suspension of curd-forming proteid and fat in whey. In general practice, however, the use of whey is practically out of the question as the process of making involves considerable care.

Plain boiled water is, as a rule, the best dilutent for general use, on account of its simplicity.

Barley water and rice water are often used, barley water having a little food value, as well as being somewhat laxative. Rice water has the advantage of being somewhat constipating and is, therefore, of value in cases where there is tendency toward diarrhea.

To these dilutents may be added lime water in cases where vomiting and diarrhea exist, the amount being 0.5 to 1 ounce to each 3 ounces of milk mixture. The addition of sodium citrate, 1 gr. to each ounce of feeding, aids greatly in reducing curd indigestion and looseness of the bowels.

As to the amount of dilutent to be used, it has been found according to Abt, Hess, and Still, that a concentrated milk mixture does not disturb the infant's digestion when the milk has been boiled or alkalinized by sodium citrate, sodium bicarbonate, or lime water.

The amount of dilutent to be used is calculated by multiplying the number of feedings by the amount of each feeding and subtracting the milk to be given.

Point 3, Number of Feedings in Twenty-four Hours.—Three-hour intervals for the first month with 7 feedings in twenty-four hours; 6 feedings during the 2d, 3d, 4th, and 5th months, and after that 5 feedings are usually sufficient.

Premature and delicate infants with a tendency to vomit are exceptions and may be fed smaller amounts at shorter intervals.

Point 4, Amount of Each Feeding.—From birth to the sixth month the average healthy infant will be satisfied with an amount of food equaling 2 ounces more per feeding than the infant is months old, as, for example, a baby 1 month old would take 3 ounces, and a baby 2 months old would take 4 ounces, and so on.

Exceptional infants will vomit as a result of over-feeding, and the amount may be reduced.

When the infant has reached the point where it is taking more than a quart of milk mixture in a day, it is time to institute a mixed diet by using a meal of broth or strained vegetable.

Point 5, Amount of Sugar and How Calculated.—Having the necessary amount of milk and dilutent, we ascertain the quantity of carbohydrate. Cane sugar answers our requirement for most cases. Milk sugar acts as a laxative in many cases. Unless the laxative effect is desirable it has not many advantages except that the lactose does not produce the flatulence that cane sugar does.

Maltose and dextrin compounds are acceptable to the infant's digestion in relatively larger quantities. They are not as sweet as cane sugar. They are of practical value when larger amounts of cane sugar are not well borne.

The so-called Mead's "Dextromaltose with Potassium Bicarbonate" is laxative, and in the presence of a stationary weight may be given in larger amounts.

There are various ways of calculating the amount of sugar needed to bring the total up to that amount of human milk. The following is a very convenient way:

It has been found that the needs of an infant in the first four or five months are well satisfied with the addition of 3 grams or 1/10 of an ounce of sugar per pound of body-weight. If using one of the dextromaltose compounds 4 grams, or 1/8 of an ounce, per pound of body-weight can be used with good results.

To summarize with an illustrative case:

Baby, 3 months old; weight, 11 lbs., should receive 5 feedings of five ounces each, (age in months plus 2) or a total of 25 ounces in a day. Subtracting 16.5 ounces whole milk (11 pounds body weight and 1.5 ounces whole milk each pound) gives 8.5 ounces or the amount of diluent to be added. Then one-tenth of an ounce of sugar per pound of body-weight would be 11 times one-tenth or one and one-tenth, approximately 1 ounce of sugar.

When instructing the mother or nurse give the following formula:

Whole milk	16.5 ounces
Dilutent	8.5
Sugar	1

Insist that the entire day's feeding be made up at one time, and not each separate feeding, as the latter way is less accurate and more trouble.

THE
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THE CURE OF LEPROSY

Our dear old friend, Hickson, the layer-on-of-hands and reciter of a prayer for the sick, who was so generously exploited in Minneapolis a few months ago, at about five hundred dollars per day, has decided to take the cure of leprosy into his own hands. And we wonder whether this man will feel perfectly safe in approaching the leprous patient and will lay hands upon his leprous limbs, or whether he will arm himself with a large bottle of chaulmoogra oil, the latest and probably the surest cure for leprosy. It seems utterly absurb to our "unenlightened" medical men that any man would make a statement for the press that he was going to cure leprosy by his so-called "faith-healing" methods. It seems, too, almost a profanation or sacrilege for anyone to be so conceited as to attempt to follow in the footsteps of the Christ. But this man will do it and, doubtless, will greatly profit thereby. He certainly will have his time fully occupied if he is going from island to island where the leprous are segregated; and unless the bottle of chaulmoogra oil holds out, he will leave many uncured. But why waste space with this piffle?

A SHORTAGE OF DOCTORS

The question of a shortage of medical men seems entirely inappropriate for discussion just now, if one is to believe the stories of the lack of business and the empty reception-rooms which have been so predominant in both the cities and the country. However, this we assume is a passing "starvation period," and we are looking forward to brighter days, when all the countries of Europe, and particularly the financial end of the United States, get busy with the proper distribution of money. That the period of depression is a real one is undisputed, a depression which is felt all over the United States. This depression seems to have followed the depression of the country, and is a part of what we might expect. Financial unrest, disturbances on the farms, the lack of marketing facilities, and the high rates of transportation have had a singular effect upon medical practice. This does not apply alone to men in private practice, but is seen in the general and city hospitals in the various towns. As an illustration of this, the Minneapolis General Hospital is usually crowded and the special departments (outside of the regular departments of medicine and surgery) are full of clinical material, but lately there seems to be a dearth of patients, but why no one can readily explain. The fact remains that it is true, consequently the opportunity to do clinical work is restricted because of a lack of material. This very naturally must be a passing condition of affairs, for it is inconceivable that any financial disruption of a country would prevent illness on the part of the people of that country. One would think that more people would be sick. But perhaps it would do us all good to have less money and go without luxuries and live less indiscreet lives and everything of that sort.

Notwithstanding all this, Professor Wm. H. Batson, of the University of South Dakota, intimates that, from his study of the situation, unless something is done to rejuvenate the medical profession, South Dakota will face a real shortage in the ranks of practicing physicians in a very few years. This report was arrived at by a questionnaire which took up the subject. Sixty per cent of the physicians who answered the questionnaire had practiced fifteen years or more, and 30 per cent had practiced twenty years. Only a small fraction had practiced less than six years. Therefore, Professor Batson concludes that the majority of physicians in the state are either middle-aged or well on in years. What a terrible state of affairs to contemplate! The man who practices from fifteen to twenty years is just starting in, and is supposed to have acquired a fair amount of practical knowledge at that time; but

to be thrown into the discard of middle or old age is not in line with professional ideas.

Then, too, Professor Batson went into the subject of the gross average and net average incomes of these men. The gross incomes in the last five years range from $1,800 to $40,000, with an average of $7,000. The net average income, deducting office rent, supplies, books, etc., ranges from $1,000 to $30,000, with a median of $4,500. It is said, further, that the average income of the physicians in South Dakota is higher than the average income of those practicing in the Eastern states. And we rather infer from the report that South Dakota, at least in some of its towns, would be a good place for a man to locate, if he wanted to earn a comfortable, if not an unusual, income.

ATTENDANCE AT COUNTY MEDICAL SOCIETIES

In order to make the meeting of a county society a success, it is quite essential that the members should attend. There are very few men who are unable to spend one evening a month for their county medical society unless it be the men in the country. Not infrequently these men drive fifteen or twenty miles to attend the meeting of their society, and such men deserve the highest praise and credit for their efforts. It is no small sacrifice to leave one's practice and perhaps leave a patient who is extremely ill and go this distance when one feels uncertain of the outcome of his especially sick patient. Yet men do it and are well rewarded for it by the papers they hear, the discussions aroused, and the social element of meeting their competitors or their friends face to face.

In the larger towns the interest should be greater, but is it? Do the men actually turn out to a society meeting and assist in making it worthy of existence? Is it always necessary to invite three or four or perhaps more outsiders to make up a program, when the men themselves of the individual society should form the program? Of late, however, it seems to be the aim and effort of various societies to introduce outside speakers, and from our previous experience with these meetings one is led to believe that sometimes it is hardly worth while. We hear a paper that is an hour or an hour and a half in length, full of scientific by-words of theoretical conclusions, or reports of an endless number of cases to prove a certain point, when we know full well that next year the viewpoint of this same man may be considerably modified. It takes a brave man to get up in a meeting in the presence of a hundred or two hundred medical men and dilate upon his pet theory, to advocate the use of special therapeutic agents, and then in the following year or two to bravely announce that his experiments were entirely unsuccessful and that his ideas were only in the formative stage, and he was wholly mistaken in his conclusions. Yet this has ben done. Look at the men who advocated vaccine therapy, pushed it, and even insisted upon its use, and then publicly repudiated it as absolutely and wholly untrustworthy and worthless. And this, perhaps, is the way in which medicine progresses, but a good many men are still firmly convinced that careful study of a few patients under proper environment, under careful methods of examination, which involve the whole physical structure, is much more valuable to them and perhaps to others than the recital of one or two thousand cases which are superficially studied and recorded.

The societies of the larger cities in which there is a large membership, are sometimes in the same predicament as the smaller societies. The members fail to take an interest, they fail to attend meetings, and it is a notable fact that the men who have been officers of the society, having served their terms of office, not infrequently drop out entirely from the meetings. They rarely attend. They think their life-work has been accomplished by their being either president or a member of the program committee, or something of that sort, and that when they have done such work they have done with the whole of medicine. This is a scathing application of a modest law in which attendance upon medical societies should be increased rather than diminished; and it should be made a part of the by-laws that past officers should be forced to attend meetings. It is true, too, that these big societies are more or less under the control of young men, which is perfectly right and proper. They should have the same training the older men had. They should have the same aspirations and inspirations to improve and advance medical society knowledge and methods.

The writer is not complaining of the attendance at the Hennepin County Medical Society, for if the attendance record of the last few years is to continue the Society will be forced into larger quarters, yet at the same time one has in mind the failure of many men to attend who

should be there to offer their opinions and experiences and to encourage the younger men who are to take their places.

THE MEETING OF ORGANIZATIONS AND DISCUSSIONS OF EDUCATION AND CANCER

The week of October thirty-first to November fifth was one which Minneapolis will long remember. It was, indeed, rather an exciting week. The entire week was devoted in some way to methods of instruction and enlightenment, either by lectures or clinics, on the cancer problem, and doubtless many people received much information that will be valuable to them. Surgeons warned their hearers of the necessity of the early recognition of cancer, and its early cure, most of the cases necessitating a surgical operation. Fortunately, some were left to the radiologist for treatment, which would be other than surgical. Doubtless, too, a good many people were more or less alarmed by the discussion of cancer, for it is announced in the public press under the authority of the chairman of Cancer Week, Dr. Henry W. Cook, that the deaths in the United States from cancer during the past year had been over 90,000; that more people died from cancer than from tuberculosis, which seemed almost incredible except that the investigation of records and the reports of the pathologists who conducted the examinations of tissue and presided at post-mortems gave some very accurate information. All of this, however, is more or less badly absorbed by the public, for every man or woman, and particularly every woman, who has a pimple on his or her nose or a wart on the body, or an enlarged gland, immediately thinks of a possible cancer, and many of them are known to have concealed growths which evidently they had permitted to become cancerous rather than exhibit them or seek relief from them. This is through fear more than anything else, and doubtless if many of these patients had gone to a surgeon early they would have been reassured that such growths were not cancerous or likely to develop into cancer.

A fear of the medical man, and especially the surgeon, is that some benign growth may possibly become a cancer, and, in order to insure the patient and to prevent the appearance of cancer, the patient is naturally urged by the surgeons to be operated on. Perhaps on the whole it is better to cut off more breasts and take out more uteri than is necessary, even though the patients are suffering only from benign diseases. Certainly more effort should be made to make a very careful diagnosis; and the later methods, which prescribe the introduction of a needle and the excision of a small part of the growth, to be placed under the microscope and thoroughly examined, usually settle the problem. With this method, doubtless, many operations are found to be unnecessary. However, the campaign of education in cancer has been progressively increasing and as Cancer Week was observed all over the United States, everyone will be more alive to the subject than ever before.

At the same time that the cancer problem was being discussed in Minneapolis, the Minnesota Education Association in its various departments met here, and among the subjects discussed were those concerned with dietetics and physical exercise, and doubtless many speakers exploited the method of educating children.

At all events, it was presumably an educational meeting for the benefit of those who are to follow us in our dreary pathway. It is to be profoundly hoped that some newer and simpler method of education will be devised, for our present-day methods are practically obsolete, and the children who come out of the public schools and out of the universities are untrained and largely unprepared to battle the life before them. In the first place, there is little consideration of what the child really needs. There is more consideration about what the authorities in charge of education think they need. For one thing, the exercise department of education was brought into the foreground, but whether it was worked out to a practical method is quite doubtful. It is probably not generally known that mild, moderate exercises continued for from five to ten minutes will do more toward the development of the physical organism than the strenuous methods that are commonly employed. This, of course, should not detract from the playtime or recess time of every public school, but there should be systematic instruction as to the benefits of simple and short courses in exercise.

These conventions are very much like other conventions—like medical conventions. People attend them because they want to get away and meet their friends. They have a good time in the city, they join in the various pursuits of the initiated, they get away from their work and worry, and especially from their domestic affairs,

and the instruction of little Johnny. And it is all right, too. Long-protracted meetings where orators "spout" and long-winded addresses are given, making but little impression, and where much misinformation is given out, are valueless. It really means that only once in a great while do we hear of a new idea; but we have fun at our meetings just the same. They are enjoyable because the social side of life is more fully developed.

GOVERNMENT A BUSINESS AGENT.

Recently Colonel C. R. Forbes, Chief of the Veterans' Bureau, made his report to Washington, and as it appears in the daily press, it sounds rather peculiar as a business proposition. For instance, the Bureau is obliged to enter into contracts with certain vocational schools, and it seems that during Col. Forbes' recent visit of inspection he encountered quite a good many schools that were a bit off color, as he believed. Some were not carrying out the work that was expected of them; and in some states men who were training for farm management were turned out on ranches where, the Colonel says, these men had about as much chance to learn farm management as a snowball has in hades,—and he found, later that this contract was nothing but a land-promotion scheme.

This, of course, is all very interesting, to think that the Government is conducting its business in this way, instead of employing some business agents who are familiar with business matters and who know how to make and carry out a business contract. Quite naturally, under the circumstances, these contracts are more or less hurriedly entered into, and equally naturally, someone is going to put it over on the Government—it seems that this has been done a number of times. Two vocational schools in Minneapolis were disapproved. One was the Minneapolis School of Lip-Reading. The contract with this school was canceled because the Government thought the rates were excessive. If the Government can be induced to pay an excessive rate in a school of lip-reading it is rather surprising particularly when one considers the length of time which a Government contract may run and the supreme indifference of the Government in paying its obligations promptly. For one thing, the Government requires so much red tape that it looks as if the red tape were transformed into radium strings encased in ironbound sealed glass tubes. At all events, the red tape is so well protected that it is almost impossible to break through for an emergency proposition or something that is really necessary to the welfare of the disabled soldier.

Colonel Forbes decided, too, that the contract with the McPhail School of Music should be canceled because he believed that piano-tuning should be taught in a piano factory, instead of in a school of music. This showed quite a bit of research work on the part of the Colonel. He evidently is a musical man and knows where musically inclined students should go. It is rather strange that he did not send them to a boiler factory so they could learn to tell the difference in sounds and studies in harmony. Mr. McPhail explains the situation, however, by saying that the Government offered them a contract on July first, but only two men applied for instruction, and the contract was turned down because the School was unable to accept the work at the figures offered by the Government.

There have been many complaints of late about the attitude of the Government toward its disabled soldiers, and only recently a man, said to be dying of tuberculosis in the Government hospital, did not receive compensation and was turned down because they could not trace the connection between his disability and his service. Perhaps no one could, properly. However, the man himself was a soldier. He had been accepted and passed after he enlisted, or was drafted, by a board of examiners. Probably he went through the hands of a physician and evidently was certified by a competent examining board as a fit subject for the service. The Government, then, accepted him, and must morally assume the responsibility of his subsequent treatment. It would seem rather inhuman not to give this man the benefit of a doubt, and to pay him. Even if he had had tuberculosis before he enlisted, perhaps his tuberculosis was quiescent and the attack precipitated by the excitement of enlisting and training and the warfare which he endured and which eventually broke down his resistance so that his old tuberculosis reappeared. Many cases of tuberculosis were contracted in the service, and doubtless many men had tuberculosis which was brought out by the activities of the service, hence the Government's responsibility here is unquestioned, and the soldier should be compensated without delay and without the long siege of litigation for settlement.

Recently a soldier believing himself to be per-

manently disabled, despite the fact that his medical attendants believed that he was well, brought suit against the Government, and, if the case comes to trial, the facts brought out may put the Government in an embarrassing position, for, if he is able to prove that his disability is even likely to be permanent, or that he will not recover for some years, the Government is under obligation to care for him and see that he is adequately compensated. If he should, by any chance, be permitted to sue the Government and a verdict is returned in his favor, it will mean the opening up of tremendous litigation schemes all over the country and the Government agents will be swamped in their efforts to protect themselves.

It would seem to those on the outside—perhaps we have no right to criticize—that the Government is running its business on a very unfortunate business basis. The machinery is so complicated that it is very difficult to accomplish anything, and it is not sufficiently oiled to make it run smoothly. We shall probably have a repetition of what took place after the Civil War—looking after disabled soldiers, their families, constantly paying out money for their care, and providing places for their detention as well as for their treatment. This is a huge scheme, and unless someone like General Dawes can inject into the disabled soldier situation a budget and a system governed and controlled by trained business men, we shall have added to our already heavy burden of tax an enormous sum to pay. It is to be hoped that Gen. Dawes will smash with a powerful sledge hammer the enmeshed red tape that embarrasses the disabled veteran.

CORRESPONDENCE

A CORRECTION

To the Editor:

In my paper on "Late Results in Stomach Surgery" in The Journal-Lancet of September 1, a couple of lines were omitted, obscuring the meaning of the summary of results.

I will thank you to republish that part of my paper, which should read as follows:

Leaving aside the cases observed less than one year after operation, we found reported as—

Well, 57 cases, or.....66% } 80%
Greatly improved, 12 cases, or....14% }
Improved, 15 cases, or.....17%
Temporarily improved, 2 cases, or 2%

Of the 46 cases observed 5 years or longer, we find reported as—

Well, 30 cases, or .....65% } 84½%
Greatly Improved, 9 cases, or...19½% }
Improved, 7 cases, or 15%

Nine cases were observed for more than 12 years. Of these are today

Well, 7 cases, or.....77% } 88%
Greatly improved, 1 case, or.....11% }
Improved, 1 case, or.....11%

Respectfully,
Arnold Schwyzer, M. D.

St. Paul, Nov. 21, 1921.

MISCELLANY

WHAT IS AN OSTEOPATH, ANYHOW?

Some people would not know an osteopath if they met him on the street, in the hospital, or in the morgue, for some people are ignorant (there's the rub) and think him a "rubber."

Here is what one osteopath thinks he is and even says he is, and it's funny:

The best educated physician and surgeon is the osteopathic physician and surgeon. He studies all the books and diagnosis and uses the instruments also of the M. D., except less medicine. But he has a spinal diagnosis and treatment the other doctors do not study or understand. This is why some cases are only cured by the osteopath. He is not a "rub doctor" and never rubs. Only ignorant people imagine that he "rubs." If you have any chronic trouble see an osteopath at once. He may cure you. Young men or women who want to take the six year physician and surgeon course at one of the colleges, see Dr. L. V. Read for particulars.—*Spring Valley (Minn.) Mercury.*

NEWS ITEMS

Dr. C. M. Pierson has moved from Breckenridge to Wheaton.

The hospital built by Dr. L. H. Labbitt, of Hardin, Mont., is now receiving patients.

Dr. J. D. Budd, for many years the leading surgeon of Two Harbors, has retired to farm life at Palisade.

Dr. Harold Rypins of Minneapolis, has removed his office from the Eitel Hospital to the P. & S. Building.

The annual meeting of the Upper Mississippi Medical Society will be held early next month in Brainerd, Dr. G. I. Badeaux, of Brainerd, is the secretary.

A hospital board of eleven members has been appointed to manage the new municipal hospital, just finished at Waseca.

Dr. Warren E. Tupper has moved from Billings, Mont., to Laurel, in the same state. Dr. Tupper is a recent graduate of Rush.

Malnutrition clinics are being held in many Minnesota towns and cities under the auspices of the Northwestern Pediatric Society.

A Minnesota physician who is in jail, in default of bail, for selling narcotics, says he has been a "dope" user for nearly forty years. He is now sixty-six.

The Minnesota State Board of Control has been looking over the Oakdale Farm near Austin with a view of its purchase for a hospital and home for epilectics and feeble-minded.

Dr. L. B. Baldwin, superintendent of the University Hospital, Minneapolis, has been appointed commanding medical officer of the 313th Regiment of the 88th Division of the U. S. Reserves.

Dr. H. E. Michelson, of Minneapolis, is at present Volunteer Assistant in the Dermatological Clinic of Prof. M. Oppenheim, Vienna, Austria. He expects to remain in Vienna until after the first of the year.

Ground was broken last week for the Shriners' hospital in Minneapolis for crippled children. It is said that the several hospitals planned by the Shriners in different parts of the country will be completed next year.

The Southwestern Minnesota Medical Society held its November meeting at Worthington last month with an excellent attendance. The principal address given at the meeting was made by Dr. F. C. Schuldt, of St. Paul.

Dr. A. J. Chesley, executive officer of the Minnesota State Board of Health, was in Washington last month urging the Government to build a hospital at White Earth for the treatment of cases of trachoma among the Indians.

Dr. R. A. Buchanan, of Independence, Iowa, has decided to move to Wessington, S. D. Dr. Buchanan is a comparatively young man and graduated at the College of Medicine of the Iowa State University, with the class of '19.

Dr. John A. Kittleson, a recent graduate of the Medical School of the University of Minnesota and for some time associated with Dr. Wm. Lerche, of St. Paul, has purchased the practice and hospital of Dr. Z. P. King at Tolley, N. D.

Miss Bessie Baker has been appointed superintendent of the nurses' training-school of the Miller Hospital, St. Paul. Miss Baker is a graduate of the Johns Hopkins training-school, and was chief nurse of a group of ten base hospital units in France.

The notice in our issue of Sept. 15 that Dr. Aaron F. Schmitt had moved from Mankato to Minneapolis, was somewhat premature, but he has now made such change and is located in 705-707 P. & S. Building. He will limit his practice to surgery and surgical diagnosis.

The famous "Doc" Till, of Wisconsin, has an imitator in a "Doc" Kirby, who is taking in bushels of dollars at his cabin near Thief River Falls. Till is trying to get out of the Wisconsin penitentiary on account of poor health. Why not let him take treatment of "Doc" Kirby?

Dr. E. W. Alger, of Minneapolis, who has had wide experience in industrial medical work, thinks coöperative industrial clinics will pay manufacturers. He points out that the greatest economic loss in this line comes from infections improperly treated and not from major accidents.

The women of St. Paul want a woman physician on the City Bureau of Health, and such an appointment has been promised them. Their choice is Dr. Auten Pine, of that city. She has been endorsed by over a dozen women's organizations. The appointment would be an admirable selection.

Dr. W. J. Mayo delivered the John B. Murphy Memorial Address before the meeting of the Clinical Congress of the American College of Surgeons in Philadelphia at which meeting honorary fellowships in the Royal College of Surgeons of Ireland were conferred upon him and Dr. C. H. Mayo.

Dr. Neil McLean, who formerly practiced in Kenmare, N. D., has located in Churches Ferry, N. D. Dr. McLean graduated from the Medical School of the University of Minnesota in 1906, and after doing war service took a special course in New York in eye, ear, nose and throat work, of which he will make a specialty in his new field.

Dr. Franklin R. Wright, of Minneapolis, has been invited to write a 16-page section for "Die Beschadigungen und Veränderungen der Haut durch Gewerbe und Beruf," a new special book in dermatology which is soon to be issued in Leipzig, with Prof. Johann Rille of Leipzig and Dozent Dr. Karl Ullmann of Vienna, as chief editors.

Dr. Mabel Ulrich has opened a book shop at 71 Twelfth Street, Minneapolis, where books and booklovers will be at home, because the atmosphere of this shop will be congenial to both, made

so by the director and the personal attendants, as well as by the visitors of the shop. Doctors, especially, will find it a good place to visit often, and they can talk "shop" and can order any book they want, if it is not already found on the shelves or tables.

The Clay-Becker County Medical Society held its annual meeting at Moorhead last month. Dr. A. T. Mann, of Minneapolis, gave an address, and the Society passed a resolution saying that the medical profession does not recognize wine and beer as medicine. The following officers were elected for 1922: President, Dr. C. H. Patterson, Barnesville; vice-president, Dr. G. L. Gosslee, Moorhead; secretary-treasurer, Dr. H. Thornby, Moorhead.

A committee has been appointed by the Huron (S. D.) District Medical Society to take charge of an entertainment for the annual meeting of the State Association to meet in Huron in May. The following constitute the committee: Drs. L. N. Grosvenor, W. H. Saxton, H. L. Saylor, J. C. Shirley, Benjamin Thomas, and O. R. Wright. The work will be well done. This committee will also strive to have a full-time health officer appointed in Beadle County, of which Huron is the county-seat.

The staffs of the Methodist State Hospital and St. Joseph's Hospital, Mitchell, S. D., hold their first annual clinic on the 6th and 7th inst. The papers on the program will be presented by outside speakers, as follows: Dr. Emil Ries, Chicago; Dr. L. W. Dean, Iowa City, Iowa; Dr. Adolph Sachs, Omaha, Neb.; Dr. D. T. Quigley, Omaha, Neb.; Dr. F. E. Clough, Lead, S. D.; Dr. M. S. Henderson, Rochester, Minn.; Dr. A. T. Mann, Minneapolis; and Dr. S. R. Maxeiner, Minneapolis. The members of the staffs of the two hospitals will give clinics at the hospitals.

There was a mistake, which we greatly regret, in the list of hospitals approved by the American College of Surgeons as published in our last issue. "St. Mary's Hospital, St. Paul," should read St. Paul's Hospital. There is no St. Mary's in St. Paul. The new proofreaders and new compositors in our printing offices, because of the printers' strike, will necessarily make some mistakes. Our readers will, no doubt, recall that Dr. E. O. Giere recently came from Watertown, S. D. to become superintendent of St. Paul's Hospital. A large additional building will soon be put up to meet the needs of the hospital.

LOCUM TENENS WANTED

For the latter part of December or early January for two or three months in a Minnesota firm. Leaving for post-graduate work and desire good man. Address 189, care of this office.

PHYSICIAN WANTED

A young man with surgical ability to locate in a thriving small town in central Minnesota, five miles from a well-equipped hospital, to work with the owner of the hospital. Eventual partnership in view. Address 191, care of this office.

PHYSICIAN WANTED

In a town near the Twin Cities. A fine village with all modern improvements and a splendid school. A good location for a good man. Address 190, care of this office.

TECHNICIAN WANTS POSITION

A young woman of fine training as a technician who has acted as an assistant and nurse in a well-known physician's office, desires a position, and will go outside of the city if necessary. Address 192, care of this office.

PHYSICIAN WANTED

A good doctor is wanted in Dent, Minn., a town of 300, in a fine dairying country with a very large territory. Address Dent Commercial Club, Dent, Minn.

BOOKS AND APPARATUS FOR SALE

The books, instruments and two operating chairs, a physician's McCaskey account and register system (practically new), and a Schneidel Weston *x*-ray machine complete, belonging to the estate of the late Dr. Barrett of Glencoe are offered for sale. For particulars inquire of F. R. Allen, Glencoe, Minn.

UNAPPOSED PRACTICE FOR SALE

In a town in southern Minnesota of 500 inhabitants, an up-to-date town that has supported two physicians. Practice at price of office equipment. Reason for selling is poor health. Address 193, care of this office.

PRACTICE FOR SALE

A practice for the price of the office equipment in a town in Dunn County, Wisconsin, on the St. P., M. and O. R. R., between Minneapolis and Chicago. Practice pays $5,000; good territory; no competition. Terms to suit purchaser. Address 188, care of this office.

PHYSICIAN WANTED

An experienced physician wanted in a good live Montana town of 1,200, in irrigated district. Must be a good man. Nothing to buy. Full particulars on request. Address 194, care of this office.

YOUNG DENTIST WANTED

A young energetic dentist is wanted in a South Dakota town of 1,200 people with an up-to-date hospital and the *x*-ray apparatus of a physician at his service. Ability to speak German would be to his advantage. A chance of a life time. Address 195, care of this office.

P. AND S. SYSTEMS FOR SALE

I have a McCaskey Cabinet and Desk System for sale cheap. Will sell either on terms. Address 196, care of this office.

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RADIUM VS. SURGERY IN GYNECOLOGY*

By H. B. SWEETSER, M. D., F. A. C. S.
MINNEAPOLIS

The two pathological conditions of the female generative organs, the treatment of which is under controversy, are fibroids of the uterus and carcinoma. I find, however, that a discussion of either would occupy all of my time, so I have elected to consider only cancer, as being by far the most important. During every year in the United States it is estimated that nearly 100,000 people die of malignant disease, about 10,000 being from cancer of the uterus. If we consider the pain and misery and hopelessness which these deaths cause, we can appreciate how large the cancer problem is, and can understand the eagerness with which we welcome any new form or method of treatment which offers any hope of solving it.

When one reads the papers and reports of enthusiastic advocates, it would seem as if there were no controversy—that radium has already supplanted, or will shortly supplant, surgery in the treatment of cancer of the uterus. But when one analyzes the results, and finds only meager success and many distressing sequelæ, then one is not so sure that he is willing to abandon the old tried methods and put his trust entirely in the new. The gravity of the problem comes to each of us very forcibly when we are called upon to decide what is the best advice to give to a patient who presents herself with a carcinoma of the cervix which is apparently operable; whether to advise a radical abdominal excision, or a vaginal hysterectomy, or an excision by heat; or to pass up these methods and trust entirely to the application of radium, which is coming more and more to be advocated by its proponents, on the plea that, if widespread inoperable tumor masses can be made to disappear and stay cured for long periods, it ought to be more feasible to cure permanently early and operable masses. The responsibility is great, and, because all methods of treatment are entirely empirical in our present state of ignorance of the etiology of cancer, our decision must rest on their relative efficiency in results. No plan of treatment so far devised can claim a great measure of success, so we can speak only in terms of relative efficiency.

Every new method or remedy for cancer claims recognition by a large percentage of early cures, but the late results of all of them have so far failed to substantiate such claims. The lack of success lies in the following facts:

1. Every known treatment, not excepting radium, is strictly local in its action.

2. Cancer is localized only at its inception, but very quickly is more or less widely disseminated from its point of origin.

*Presented at the Thirty-fourth Annual Meeting of the North Dakota State Medical Association, Fargo, N. D., May 26 and 27, 1921.

3. Its onset is so insidious and its early symptoms so intangible that, in the great majority of cases, before its victims are aware of its existence, it has spread far beyond its point of origin, and far beyond the control of any form of local treatment. This is especially true of carcinoma of the uterus, at least of carcinoma of the cervix. Even if microscopically local, we still know that, in 40 per cent of the cases, microscopic-extension has already taken place along the lymphatics, and that distant metastases, undiagnosable, may be present.

A truly scientific and ideal treatment must take cognizance of this power of dissemination, which malignancy exhibits and, if such a treatment is ever discovered, it must take one of two forms:

1. It must act as an immunizing agent, rendering the healthy body sterile to the cancer cell. That immunization is within the range of possibility is evidenced by the fact that cases are on record of extensive local carcinoma with internal metastases which have spontaneously recovered.

2. It must have the power to seek out and destroy every cancer cell wherever present, and it must do this without damage to the normal tissues. It is of great interest to follow the efforts that are being made in this direction. In the *British Medical Journal,* July, 1920, E. Watson Williams reported on the use of colloidal salenium in inoperable carcinoma by injection into the blood stream. Of the 18 cases treated, 14 were more or less improved, and 2 were clinically cured at the end of seven months, one cancer of the stomach and one cancer of the esophagus.

Coming now to a consideration of the various forms of treatment at present in vogue (for such a consideration is necessary in order properly to orient ourselves as to the value of radiotherapy), we may group them as follows: first, those which depend on excision by anatomical dissection; second, on excision by the cautery; third, on destruction in situ by heat; and, lastly, on destruction, also in situ, by radium and the *x*-ray. It is necessary that we group the cases of disease both as to the stage of development and as to location. Thus, we may have pre-cancerous, operable and inoperable cases as regards the stage of development; and as regards location we must sharply differentiate between cancer of the fundus and cancer of the cervix. If, now, we can get at the results obtained by the various methods of treatment as applied to the different groups of cases, these results will give us relative values as to their efficiency, and help us to form a correct opinion as to the present potency of radium and the *x*-ray as now applied in the treatment of cancer as compared with other standard methods.

Pre-cancerous State.—We know that continued irritation in some way does stand in a causative relation to the production of cancer; and in the uterus this irritation is the result of erosions, of lacerations with the formation of scar tissue, and of chronic endometritis. If all women with these lesions could be induced to submit to their removal by operation, no doubt a great number of potential cancers would be aborted. If the radiologists are correct in their interpretation of the action of radium, these pre-cancerous conditions ought to be more successfully controlled by its use than by operation, because of the wider area rendered immune and because of the destruction of any undiagnosed nests of cancer cells. It would have the added advantage that many women would submit to such a procedure who would refuse operation. Also because of the increase in the number of patients the radiologists might be induced to treat such conditions at a minimum fee.

Excision.—Until very recently, and possibly even now, excision has stood as the most advanced and most scientifically correct treatment for carcinoma of the uterine cervix. During the last forty years, because of the discouragingly large percentage of early recurrences, excision has extended its field from simple removal of the diseased area with practically no mortality, but with nearly 100 per cent recurrence, to wide ablation of the uterus, appendages, parametrium. iliac and lumbar lymphatics, and even portions of the ureters and bladder, with a very large primary mortality and a not greatly lessened percentage of recurrences.

Cullen, in 1900, reported on 141 cases of radical excision, of which 50 per cent were operable. His primary mortality was over 15 per cent, only 3 per cent passing the five-year period without recurrence. Janeway, in 1919, made an analysis of 5,027, collected from the large European and American clinics. Only 34.2 per cent were operable; there was 19.3 per cent primary mortality, but 11.7 per cent were well at the end of five years. If, however, all operators, good, bad, and indifferent, are included, the death rate is far in excess of 20 per cent, and the percentage of five-year cures recedes to 4.

Such a showing, even if employed for an absolutely hopeless disease, is far from satisfactory,

and explains the eagerness with which other methods are sought which offer hope of better results.

Excision for carcinoma of the fundus, on the other hand, gives much better results, because of the greater resistance of the muscular wall of the body to a spread of the cancer cells. The operability is about 85 per cent; the primary mortality does not exceed 8 or 9 per cent; and the cures for the five-year period exceed 50 per cent. These results are far better than those by any other method, and therefore excision is advised as the method of choice even by the radiologists, unless contra-indicated, as in the grossly obese, or in those suffering from cardiorenal disease, etc. It is unfortunate that cancer of the uterus is confined to the fundus in only about 5 per cent of cases.

Heat.—In the form of the actual cautery, heat is an ancient remedy and was widely used in cancer of the cervix before the advent and development of the modern radical excision. In the hands of the late John Byrne, of Brooklyn, its ardent advocate, and as applied by him, the results have been remarkable. His statistics, published in 1889, are founded on 367 cases, 216 of which were traced for a period of twenty years. Forty-three per cent remained free for over two years, and 19 per cent for over five years, and there was no primary mortality.

X. O. Werder, of Pittsburgh, has extended the operation of excision by cautery (igni-extirpation) so that it rivals in thoroughness the radical operation by dissection. He reports his results for twelve years (1905-1917) in July, 1918. (Penn. Medical Journal, July 1918). He does not mention the percentage of cases that are operable, but it may be assumed to be as large as that by dissection, that is, about 35 per cent. There were 88 cases: mortality 5.7 per cent; 27, or 45.76 per cent, cured after five years. If we assume that his operable cases were only 34.2 per cent of all coming for treatment, then his permanent cures amount to about 10.8 per cent of the whole number.

Percy, in 1912, developed a method of applying a low degree of heat, founded on the demonstrated fact that cancer cells are destroyed, or at least inhibited in their power to propagate, when subjected to a temperature around 42°C., or 107°F., a degree which does not seriously injure normal tissue cells. By his method he claimed, and at present still claims, that the malignant tissues are destroyed to a depth of several inches. In 1918 he reported 65 cases, mostly inoperable and comprising 95 per cent of the cases applying for treatment. There was no primary mortality, and 15 per cent were clinically cured for periods varying from over two years to over nine years; 1 for 9 years and 3 months; 1 for 6 years and 7 months; 1 for 5 years; 1 for 4 years; 2 for over 3 years; and 4 for over 2 years. In his latest paper (published in February, 1921), he says:

"The only effective substitute for the cold knife in cancer is the hot one, and when the technic of its correct use is learned by surgeons there can be no question as to its final place in the treatment of all forms of malignancy."

Both of these methods apparently are capable of giving results better than those by excision, even in the hands of the most skillful, and rivalling the best of those by *x*-ray and radium, and it is difficult to understand why they have not been more generally used.

Radium and X-Ray.—These may be considered together. They are both radio-active, and their effects upon the tissues are apparently identical. They are both used, separately or in conjunction, in the treatment of malignancy. Seven or eight years ago the *x*-ray held the center of the stage, and the published reports were very enthusiastic as to its potency in the cure of cancer.

At present, however, *x*-ray has been largely supplanted by radium, which is coming into more and more general use, in spite of its great expense. Almost every clinic and many individuals possess it, in larger or smaller amounts. It is heralded in the daily press as the long-sought-for sure-cure for cancer, and it is being accepted as such by the people. It may well be asked, Are we about to develop, or have we already developed, a method of treatment which is to transcend all former ones in efficiency and value? Its literature has become very voluminous; it is being studied from every angle, and much is coming to light as to its physics and its effects on the human system. Its influence over malignant tissue is marvelous and most spectacular, and appeals strongly to the imagination.

Out of the mass of evidence accumulated we have come to learn certain things about it which are definite and which have a bearing on its value in the treatment of cancer:

1. Its action is strictly local; its effective penetration, in safe dosage, being estimated to be not

more than two or three centimetres, and metastases, unless directly attacked, are not influenced. Efforts have been made by various means to reach deep-seated and distant foci, but so far they have not met with much success. Intravenous injections of active deposits of radium offer the most promising hope of success in this direction, and encouraging results are said to have been attained in certain forms of malignancy, but not in cancer. They are, however, extremely dangerous, and only minute doses may be used (50 to 250mc.), (Facilla, "Radium," November, 1920). Over ten millicuries kill rats in a few hours or days.

2. Radium, as far as known, does not act as an immunizing agent, that is, it does not render the body, as a whole, resistant to the development and growth of cancer.

3. Radium affects all tissues, normal as well as neoplastic; but the latter are much less resistant to its action. and a dose lethal to them leaves the normal tissues uninjured. It is this difference in resistance which gives radium its ability to destroy malignant cells in situ, while leaving intact the contiguous healthy cells. If every cancer cell could be brought directly under radiation, the problem of the treatment of cancer would be solved; but, unfortunately, there is limit to the therapeutic application of this power of radium in the pelvis. On the one hand, cancer of the cervix quickly spreads to the parametrium; and, on the other hand, the power of radium is inverse as the square of the distance. Cells which are 4cm. from the point of contact of the radium element require 16 times the dosage sufficient to kill at that point, and such dosage is very liable to damage the intervening healthy tissue. Following massive doses there have occurred many distressing sequelæ, as cystitis and proctitis, fecal and urinary fistulæ, and even death from toxemia.

4. A further check on the successful application of radium, is its power to stimulate growth if not applied in sufficient dosage to kill. So far this obstacle has not been met, but the most feasible plan suggested is to reduce the vulnerability of the cancer cell to a point where it will be killed, even at a great distance, by a quantity of rays insufficient to affect the healthy tissues. Heat has been the agent used to produce this vulnerability, being sometimes preceded, sometimes followed, by radiation. In the *Archives of Surgery* of January, 1921, Rohdenburg and Prime report some interesting and suggestive experiments on the effects of combined heat and radiation on neoplasms, using "mouse" tumors and diathermy as the source of heat. Their results show that the combination is much more effective in causing the disappearance of the tumors than either agent used alone. They state that the method is being tried in the human.

5. A time comes in the development of every cancer when its cells become just as resistant as are the contiguous healthy cells. When this stage is reached, radium is no longer effective and cannot be used as a cure. (Finzi; Brit. Med Journal, July 1920.)

Results.—Because radium treatment of cancer, like all other treatments, is entirely empirical, its present status can be defined only by what it has produced in results, and we can arrive at a knowledge of these results only by analysis of the published reports.

1. *Operable or Early Cases.*—We can gain little information concerning results in the early cases, for only very few have been entrusted to radium alone. Janeway reports 5 cases, 2 of them free from recurrence for two years, and 3 for one year and over. Esquireda reports 10 cases, with three deaths, 1 improved, and 6 free for periods less than two years. Recasens (Surgery, Gynec. and Obst., September, 1917) reports 16 cases, all of which remained free, some for more than three years. Matas reports 5 cases, from four months to three years, and now depends on radium in early cases entirely. Other reports of a few cases each are encountered, grouped with the late cases, but the data concerning them are not definite enough to be of much value. The paucity of cases in this group (32 only were found) is explainable both because radiologists until recently were unwilling to assume the responsibility of their treatment, and because physicians were not convinced of its value. But now many radiologists have become more confident from their successes in late cases and are strongly urging the submission of these early cases to radium therapy, and claiming that it is in these alone, just as in surgery, that radium will show real cures. Most likely in a very short time statistics will show its true value as a curative agent.

2. *Inoperable or Late Cases.*—Many reports of the efficacy of radium in late cases are recorded, most of them showing a large measure

of early successes, and only a few of them showing failure.

The latest report of Clark, of Philadelphia, made a year ago, covered the five-year period from January 1, 1914, to January 1, 1919, so that all his cases were at least a year old from the last application. It included 209 cases, 185 being of the cervix, and all inoperable. Seventy-three were living and free from recurrence, about half of them for over one year, but only 3 for over five years. There was no primary mortality, although some died within one or two months. This is a most encouraging report, especially when one considers that all were beyond hope from excision. And yet, even with such results, in early operable cases he still advises radical excision, preceded by a single radiation.

Recasens (Surg., Gynec. & Obst., September, 1917) reports on 126 inoperable cases, with 27 free over two years, and 45 free over one year. But, although he is is very enthusiastic about his 70 per cent of cures, he was apparently not quite satisfied with radium alone, for, in his most recent cases (about one-third), he also used *x*-rays.

Heyman (Abst. in Surg., Gynec, & Obst., quoted in Radium, June, 1920) reported 66 cases of over five years standing, with 26.9 per cent permanent cures. Twenty-six were treated in 1914; of these 7 have remained well, and 17 have died of cancer, and 2 of other diseases. Forty were treated in 1915; of these 11 have remained well, and 29 have either died of cancer or have not been traced. Eighty-five per cent of the whole number were inoperable. This is by far the best showing I have encountered.

But all reports are not favorable. The statement is often heard that there are no cases, however far advanced, which may not enjoy the benefits accruing from radium applications. This apparently is not quite exact, for in the late reports it is repeatedly stated that far advanced cases should be refused treatment, as this tends to bring radium into disrepute. In the Manchester Radium Institute Report for 1917, 13 per cent of the cases were tabulated as not treated or abandoned treatment, or not suitable for treatment; and it is fair to assume that this probably represents the number too far advanced to offer any prospect of improvement. It is also frequently stated and claimed that radium application is attended by no primary mortality; this also cannot be quite true, for one does, every once in a while, run across the report of a fatality.

The adverse reports are not many, as far as my investigation went. Thus, H. Wintz (Monatschrift fur Geburt. & Gynec., May, 1920) reported that post-operative prophylactic applications at his clinic caused injury to the bladder and rectum so often that they had to be abandoned.

J. L. Faure makes the interesting statement that in the operative cases in which radium was used as a prophylactic adjuvant, the percentage of recurrences was larger than when this radiation was omitted, namely, 50 per cent as compared with 40 per cent.

Deaver is positive from his experience that we are not yet ready to supplant surgery by radium, and notes some of the poor results.

Lynch (April, 1919, quoted in Radium, June 1920) reports an inoperable case made apparently operable by radium, but when operation was attempted it had to be abandoned because the ureter was found imbedded in a mass of softened cancerous tissue.

If now we group the number of cases in these various reports, and they are fairly representative of the most advanced work, we have a total

TABLE

Method	Number of Cases	Percent Operability	Primary Mortality	Free, 5 years		Free, 3 years		Free, 2 years		
				Operated cases	All Cases	Operated cases	All cases	Operated cases	Free 7 mos.	All Cases
Excision (Radical)	5027									
I. Cervix		34.2								
a. Large Clinics			19.3		11.7					
b. All operators			20–30		4.0					
II. Fundus		85	8–9		50.0					
Heat										
I. Cautery (Byrnes) excision	367*	100	0.0		19					
II. Cautery (Werder) extirpation	257**	34.2	5.7	45.76	10.8					
III. Low Heat (Percy)	65	100	0.0	7.04	4.6		9.2		15.4	
Radium and X-Ray	481	87	?		4.6		10.6		13.5	
Intravenous										
I. Colloidal Selenium	18	100	0		0.0		0.0		0.0	11.1
II. Active Radium Deposit	No data	available								

*Eight of these were fundus.
**Estimated.

of 426; and if we add to this 55 (13 per cent) as the number probably examined but found too advanced even for radium, we have a grand total of 481 cases, which can be used as a basis in measuring the efficiency of radium in the treatment of uterine cancer, as compared with the efficiency of the other methods in vogue.

From this analysis what conclusions can we draw and what predictions can we make for the future, as to the successful management of cancer of the uterus? In the first place we must acknowledge, without the shadow of a doubt, that we have at present no method of treatment that approaches in any sense what may be called a cure, nor can we hope for any until more of the life history of cancer is discovered. We do know, however, its power to infiltrate healthy tissues widely, its variable malignancy, and its power to re-implant itself in distant parts, that is, to metastasize; and these characteristics must always be reckoned with in each individual case.

METHODS OF TREATMENT

I. Of the fundamental types of treatment, that by anatomical dissection has been developed to its greatest possibilities, and has failed when cancer cells have invaded the glands around the iliac vessels. As exemplified in the radical excision, it has reached its zenith, and can never hope to cure a larger percentage than it does at present. Because of its low operability, its high mortality, its small percentage of permanent cures, and the great skill required for its efficient performance, there is no question that it is destined to be superseded by other methods which offer more hope of success.

II. Excision by the actual cautery has proved wonderfully efficient in cancer of the cervix, as evidenced by the statistics of Byrne, but these statistics are explainable only on the supposition that his cases were early ones, without extensive metastases into the parametrium. Cancer nests lying several inches from the point of contact of the cautery are impossible of destruction without, at the same time, killing the contiguous healthy tissues. Nevertheless, although the action of the cautery is more strictly local than is dissection, it excels that method in the fact that by it implantations of cancer cells cannot occur. In early cases with only moderate apparent extension, I would feel safer in submitting my patients to a cautery excision than to any other method as at present developed. When extension has progressed so far as to render a case manifestly impossible of eradication by excision, heat, by the Percy technic, may still be able to successfully cope with it, as it claims to be able to reach and kill malignant cells even to a depth of several inches without irreparable injury to the normal cells. The chance for popularity of the Percy method has greatly suffered because of its introduction almost simultaneously with the advent of the use of *x*-ray and radium, but it is founded on right principles and is sure to gain proper recognition.

III. Probably without question the rays emanating from radium exercise a more potent influence over organic matter than any other agency of which we have knowledge. The obstacles which prevent their successful application lie, not in the lack of their potency, but in our ignorance of the laws which govern them. That this is so is proved by the great variation in the methods employed, as regards dosage, screenings, times of application, etc. Its action is local, just as the action of heat is local, only because of our inability to destroy all the cancer cells without at the same time causing irreparable damage to the healthy tissues. If a technic is ever arrived at which will kill the cancer cells and leave the normal tissues unaffected, then we may justly claim radium as a cure par excellence. Possibly, as has been indicated, such a technic may be developed in the future, in conjunction with *x*-ray and diathermy, the former for cross-firing the deep tissues, the latter for increasing the vulnerability of the cancer cells; but, unfortunately, such a technic does not as yet exist. In the light of this analysis, what conclusion may we come to concerning the status of radium in the treatment of carcinoma of the uterus? I think we are justified in arriving at the following conclusions:

1. Radium alone cannot be advised as the treatment for small, early operable cases strictly localized in the cervix, for the reason that we never can be sure of having destroyed all the cancer cells, and that those which escape destruction may not later take on renewed activity, as so often happens following its use in more advanced cases. I am sure, from a study of the available statistics and from my own experience, that excision with the cautery knife will give a much larger percentage of permanent cures.

2. In cases further advanced, but still not beyond the possibility of total eradication, excision by the combined method of X. O. Werder

with the cautery knife and clamps or by the method of Percy will probably give a larger percentage of cures than the use of radium.

3. In far-advanced cases with wide infiltration into the parametrium, we must necessarily turn to such agents as radium and *x*-ray. Radium alone, applied in the uterine canal and in the vagina, sometimes produces very startling regressions and even entire disappearance of the lesion, but, unfortunately, relapses are the rule, and only a few cases remain well for the five-year period. So well is this lack of success appreciated that in the recent literature it is strongly urged that deep cross-fire with *x*-ray be used in conjunction with radium, either in the vagina or as needles thrust directly into the parametric tissues. If at the same time we can apply diathermy to increase the vulnerability of the outlying cancer nests, we may possibly then have the most ideal treatment for cancer of the cervix which it is possible to have in the present state of our knowledge. If such a combined treatment can be successfully worked out, we may hope to influence favorably so large a number of cases that it may be considered almost in the light of a cure.

DISCUSSION

Dr. V. J. LaRose (Bismarck): I believe that the status of radium today, particularly in regard to its use in gynecology, is not such as to justify an attempt to supplant surgery with it. Radium should be used really as an adjunct to surgery and not as a competitor.

Owing to shortness of time the essayist did not have opportunity to touch on nonmalignant tumors of the uterus, and I think a word might be applicable to the treatment of nonmalignant conditions of the uterus during the menstrual age. Every effort should be made to conserve the menstrual function, and in many cases this can be done by the operation of myomectomy. To my mind, that is the treatment that should be advised in order to avoid the distressing symptoms of premature menopause, and we all know what lines of symptoms and complaints these patients develop afterward. Of course, there are exceptions.

There are some women who need a radical operation, but through fear go on and suffer pain and loss of blood until they reach the stage where they are no longer good surgical risks. In such cases there is only one treatment, and that is by the *x*-ray or radium. Then we have that class of cases in which constitutional disease is present, where surgery is contra-indicated.

When hemorrhage occurs in women past forty in the uncomplicated case of myoma or fibroid, radium works wonders. It seems to be the treatment *par excellence* in these conditions. But before using radium in a fibroid or myomatous condition of the uterus, there are certain conditions we should first rule out. For instance, if we use radium in the case of a large pedunculated fibroid there is possibility of causing sloughing of the pedicle and consequent sloughing of the fibroid, which gives trouble and may require surgery later to remove it from the pelvic or abdominal cavity.

Then we have extremely large fibroids, the rapid retrogression of which may cause a severe toxemia. Some cases have been reported where the toxemia has even been fatal.

Ovarian cyst must be ruled out and also inflammatory conditions due to old infection of the tubes which adhere to the uterus, and a mistaken diagnosis of myoma may be made due to enlargement. Here radium treatment may be disastrous.

Dr. Sweetser spoke of endocervicitis. I have treated a few cases of endocervicitis of the type in which the cervix bleeds easily, the slightest touch causing bleeding, and where the process has not continued long enough to enable one to determine that the condition is malignant; but, fearing that it is, I have been treating these cases by applying radium to the cervical canal.

Dr. A. S. Flemming (Minneapolis): The truth is many-sided, and it is rather difficult for any one man to tell it all. I am going to claim one benefit that is to be derived from discussion of this subject, if no other. It has aroused the medical profession of this country, and the surgeons in particular, to the point of realizing the limitations in their ability to fight this problem of malignancy, so we are having a rejuvenation of discussion as to what to do with malignancy. Unfortunately, Dr. Sweetser is temperamentally a controversialist. He treats this problem as a controversy, and that is death to any scientific advancement, absolutely. A man should approach this or any other scientific problem in an unbiased attitude, asking for the facts and presenting them in full. This elaborate study that Dr. Sweetser has so graphically brought before you is a goodly illustration of what can be accomplished by tabulated study of any problem in science. It is a study practically of the same thing that Dr. Janeway, in his paper of 1919, presented, but from which he arrived at exactly opposite conclusions.

So much for the controversial feature of this thing. Unfortunately, I, too, am a temperamental controversialist, so you will have to make allowance for my statements. But, knowing my handicap, I try to stick as unbiasedly to the facts as I am capable of stating them. I am also a pacifist naturally. Yesterday I said, when we criticized the laity for not coming in early enough, that the laity had only reflected the attitude of the profession on this question of malignancy. They reflect also our attitude on many other questions. The older members of the profession will remember the great glory we of twenty to thirty years ago achieved in wipening out our therapy. We rather reveled in and boasted of our therapeutic nihilism. And what are we having today? Today the public revels in Christian Science, neuropathy, etc. But they reflect exactly what we reflected and taught them to believe—we had no use for therapy. So do not blame the laity.

The cancer problem in the pelvis is no different from the cancer problem elsewhere in the body. If we could arrive at an early diagnosis in the problem of cancer of the pelvis, there is no question of doubt as to what the proper procedure would be;—radical and complete removal. Cancer is strictly a local process until generally metastasized; and it does not matter what you destroy it with—whether you remove it with a knife,

whether by means of a cautery, or whether you destroy it with radium or what not; just so you destroy it; that is the problem. But the most important point in the attempt to destroy it is to destroy it *all*. When the essayist asked for an ideal treatment for malignancy, he stated that he wanted something that would destroy every pathological cell and leave the normal cells intact. That certainly is an ideal to be striven for, and we hope in time it will be attained. But the surgeon early and long ago realized his limitations in the pelvis.

Cancer does not so often go around throughout the anatomy, but extends directly by continuity along the lymph channels. In the pelvis that very thing is true. As a matter of fact, the condition presented by the average patient in the average clinic in America, is such that 90 per cent of the cases are practically inoperable. The question of operability, of course, depends somewhat on the skill of the surgeon.

So the problem practically resolves itself to this: What are you going to do? Are you going to discard the large percentage of inoperable cases? To my mind, there is no question as to the efficiency of radium treatment in carcinoma. The whole problem in the technic is to do what Dr. Sweetser asks us to do,—destroy every particle of the carcinoma. On the strength of Dr. Janeway's analysis of these cases, and on account of the very favorable results secured in admittedly inoperable cases, he has asked if it would not be wise to give opportunity to do something in the more favorable cases, the less extensively involved cases, the early cases.

Dr. Sweetser (closing): I just want to say that the radical operation for cancer of the cervix has already reached its zenith. We cannot expect to do anything more with it than has been done in the past. We have gotten to the limit, first, because there would not be enough expert surgeons to secure as good as 10 per cent of permanent cures, and, secondly, because vital structures limit any further extension of the radical operation. So it becomes necessary for us to adopt something besides dissection of these cases.

I think I was pretty fair when I said that we have in radium not radium alone, but radium associated with *x*-ray and surgery, a method whereby the vulnerability of cancer cells may be affected. In this combination we have, in the light of our present knowledge, the very best we can hope for. And I am sure that if these three agents can be employed together, to act on carcinoma of the uterus, we shall arrive at a percentage of permanent cures far in excess of that obtained by any other methods that have been devised. Excision has reached its limit, and we have to look for something else.

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THE DIAGNOSIS AND TREATMENT OF TUBERCULOUS EMPYEMA*

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Tuberculous empyema may be defined as a type of suppurating pleurisy in which the tuberculosis bacillus is either the sole infective organism or is one of the organisms of a mixed infection. Dry adhesive pleurisy with serous effusion and suppurative or hemorrhagic pleurisy constitute different grades of reaction to pleural infection. The extent of the pleural reaction is in proportion to the virulence of the infection and the resistence to it.

From a pathologic point of view tuberculous pleurisy may be sub-divided into primary and secondary forms. To the first belong the cases of initial involvement of the pleura; to the second, cases following lesions of the lungs, chest wall, or glands. Some writers consider all cases of tuberculous pleurisy secondary to pulmonary involvement. Cases occur, however, in which there is no demonstrable focus in the lung. In such instances possibly the lung tissue furnishes only the avenue of infection.

Primary tuberculous pleurisy, with or without effusion, probably occurs more frequently than is generally recognized. Hodenpyl found nod-

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ules on the visceral pleura in forty-four of ninety-one cases in which the lungs were free from tuberculosis. These nodules were proved to be tuberculous by microscopic examination in forty-one cases, and in three without nodules foci of tuberculosis were demonstrated microscopically.

The question of the etiology of primary or idiopathic pleurisy with effusion is of special importance in the consideration of tuberculous empyema. Series of cases of pleurisy with effusion followed for from five to twenty years show that from 35 to 55 per cent of the patients eventually die of tuberculosis (Osler, Hodges, Sears, and others). A latent period of five years is noted in about 50 per cent; in 7 per cent of 164 cases it was ten years or more (Köster). Furthermore, tuberculosis has been demonstrated in the exudate by examination of the sediment of the digested clot formed in the effusion, or by animal inoculation, in from 20 to 100 per cent of the cases.

The bacteriology of undrained tuberculous empyema has not been so well studied as has that of serous pleurisy. Netter, in a series of 109 cases of purulent pleurisy, found tuberculosis bacilli in 15 per cent, but in thirteen cases diagnosed tuberculosis he found the bacilli in only 5. The consensus of opinion is that it is difficult to demonstrate the bacilli, but that a sterile exudate is tuberculous in the majority of cases. Beck writes that following the injection of an irritating substance, such as bismuth paste, the bacilli may be found in the exudate in large numbers.

DIAGNOSIS

Positive proof of the tuberculous nature of a purulent pleurisy is afforded by finding the bacilli in the exudate by direct examination, by a positive animal inoculation, or by a demonstration of the characteristic tubercles in the excised pleura. Unfortunately, the demonstration of the bacilli is usually difficult, and the animal inoculation test results in many failures and requires at best six weeks of time. The examination of the pleural tissue is a postoperative procedure. In the ordinary case, therefore, a presumptive diagnosis must be made on the clinical history of the case, the character of the exudate, and the recognition of a tuberculous process in some other organ.

A family history of tuberculosis is of some value. Cabot showed that in a series at the Massachusetts General Hospital of 300 patients with pleurisy 67 per cent, who later developed tuberculosis, had a positive family history, while only 25 per cent of those who remained well had such a history. An insidious onset without a preceding infectious disease, especially if accompanied by fever, night sweats, loss of weight and strength, loss of appetite, and progressively increasing nervousness is always suggestive of tuberculous infections. A history of preceding pleurisy with effusion, even though years before, affords grounds for the suspicion that a later idiopathic empyema may be tuberculous. A history of pleurisy with serous effusion in an adult should be evaluated equally with that of an hemoptysis (Lemon).

The presence of a tuberculous lesion in other organs, notably in the lungs and in the peritoneum, lends weight to a presumptive diagnosis of the tuberculous nature of co-existing empyema. Osler states that the pleura is always involved in pulmonary tuberculosis. Effusion complicating a therapeutic pneumothorax or following a spontaneous pneumothorax, even if pyogenic organisms are found on culture, is probably tuberculous. A sterile purulent fluid, especially in the presence of fever and a low leukocyte count, is almost certain to be tuberculous.

MAYO CLINIC SERIES

The records of the Mayo Clinic since 1910 contain histories of twenty-three patients with empyema proved by bacteriologic or pathologic examination to be tuberculous empyema (Group 1). Fifty-one cases not so proved, but in which a tuberculous lesion elsewhere or other clinical features make for at least a probable diagnosis of tuberculous empyema, have been classified into three groups; Group 2, sixteen patients whose diagnosis was definite clinically, although the bacillus or tuberculous tissue was not demonstrated; Group 3, twenty-two patients with empyema associated with pulmonary tuberculosis; and Group 4, thirteen patients with a history of primary idiopathic pleurisy with effusion.

The relative incidence of tuberculous empyema as reported in the literature varies from 3 to 19 per cent in thirteen series of cases. In about 360 cases of empyema at the Mayo Clinic since 1910, sixty-one (about 17 per cent) were more or less definitely tuberculous. It is entirely probable that the incidence is considerably higher than this; Beck states that probably 30 per cent of empyemas are tuberculous.

TREATMENT

In the treatment of tuberculous empyema account must be taken of its varied pathology and of the patient's condition. A distinction must first be made between effusion in a closed pleural cavity and effusion in an open cavity. The exudate in a closed cavity may be sterile or secondarily infected; that in an open cavity is always secondarily infected.

Pleural Effusion in a Closed Cavity.—There is much evidence to indicate that a pleural effusion is a conservative condition so long as the exudate does not become large enough to interfere with respiration or circulation. The fact, however, that the improvement often observed in cases of pulmonary tuberculosis after effusion develops is not proportionate to the amount of fluid nor to the time it has been present seems to show that this improvement is not mechanical, but due to a biologic process of much importance, further, there is evidence to show that a serous effusion after repeated aspiration is more apt to become purulent, and consequently chronic, in its further course. Clinical experience has also shown that the removal of a small amount of effusion is often followed by further rapid spontaneous absorption, while the aspiration of large amounts may lead to rapid re-accumulation.

Aspiration of a large amount of effusion with consequent expansion of the lung may be distinctly injurious in the presence of active pulmonary tuberculosis, while a collapsed, splinted lung may be very beneficial. From these considerations it seems very doubtful that it is ever advisable to aspirate a serous effusion unless it is causing dyspnea, cyanosis, or a rapid pulse.

A patient with a sterile purulent exudate should be treated on the same principles as one with serous exudate. Patients with pus in the pleural cavity are, unfortunately, very liable to become the victims of injudicious surgery. This condition represents an exception to the rule, *ubi pus ibi evacue,* for the simple reason that there is no pus in the sense in which the word is used in this hackneyed phrase. A sterile pleural effusion, like a cold abscess elsewhere, should be aspirated, and, if the pus re-accumulates, an extrapleural rib resection is indicated to collapse the chest wall without opening the pleural cavity. Open drainage always leads to secondary infection. These are the cases in which later operation seldom cures and in which the postoperative mortality rises to 80 per cent. A mixed tuberculous and pyogenic infection in a closed cavity, especially if there is marked sepsis, on the contrary, requires prompt drainage, either by the open method or by the closed, with Dakin's solution irrigation.

Tuberculous Exudate in an Open Pleural Cavity.—The opening into the pleural cavity in these cases may follow a drainage operation or spontaneous perforation of an empyema necessitatis or perforation into a bronchus, due to a ruptured tuberculous cavitation, producing an associated spontaneous pneumothorax. Most of such patients seen at the Mayo Clinic have had drainage operations elsewhere. There was a mixed infection, and almost without exception a plastic operation was required with or without preliminary redrainage or antiseptic solution treatment.

TYPES OF OPERATION

Drainage Operation.—It cannot be overemphasized that the open drainage operation is contraindicated in cases of sterile tuberculous empyema. It will introduce a secondary infection, and the sinus will not heal. In forty-one patients (55 per cent) of the cases in this series drainage had been done elsewhere. In thirty-one cases primary drainage was instituted at the Mayo Clinic either for an overwhelming infection or for a perforation into a bronchus.

Decortication of the Lung.—The decortication operation is probably rarely advisable in cases of tuberculous empyema. First, the chance of a cure is relatively poor because of the presence of fibrosis limiting the expansibility of the lung; and, second, if the lung is able to expand there is danger of lighting up a pulmonary focus. In this series the operation was performed in six cases, in all before the tuberculous nature of the empyema had been recognized. These cases have been reported elsewhere in a larger series. A secondary operation was later required in five.

Plastic Operations.—In plastic operations a skin flap, a skin muscle flap, an extensive Schede, or an extrapleural rib resection—all have their indications. For a small draining, infected cavity, resection of the entire chest wall over the cavity with a skin flap plastic operation after the method of Beck is probably best. For large cavities of very long standing, with greatly thickened pleuræ and marked deformity of the ribs, a Schede operation, preferably in stages, is indicated. For all sterile undrained cavities and for large open cavities without undue thickening

of the pleura, operation in several stages involving the resection of segments of the ribs of from 6 to 15 cm. through an incision parallel with the vertebral column and close to it resulting in a very marked collapse of the chest wall, and consequent diminution in the size of the pleural cavity, is indicated. If the cavity is not wholly obliterated a resection of the cartilages of the upper ribs through an incision parallel with the sternum results in further narrowing. If necessary, a modified Schede operation can be done on any residual cavity. This operation carries with it a minimum of risk and a maximum of chest wall collapse and, consequently, a large percentage of cures. In this series a plastic operation was performed in twenty-two cases.

RESULTS

The end-results are known in sixty-seven of the seventy-four cases. Fifty-eight and two-tenths per cent are cured, or much improved; nearly 4.5 per cent are not improved; and 37.3 per cent are dead; 14.9 per cent died within two months of operation.

Of the patients in Group 1 definitely proved to be tuberculous, 61 per cent were cured, or greatly improved; 39 per cent died; the operative mortality was 21.7 per cent. In Group 2, patients with clinically tuberculous empyemas, in whom the results are known concerning fourteen, 50 per cent were cured or much improved and 50 per cent died; the operative mortality was 21.4 per cent. In Group 3, patients with empyema associated with pulmonary tuberculosis, about 57.1 per cent were cured or much improved, and 14.3 per cent not improved, 28.6 per cent died; the operative mortality was 4.7 per cent. In group 4, patients with empyema following pleurisy with effusion, about 66.7 per cent were cured or improved; 33.3 per cent died; the operative mortality was 11 per cent.

SUMMARY

1. Primary or idiopathic pleurisy with effusion, in a large proportion of cases, is probably tuberculous in nature.

2. A past history of pleurisy with effusion is common in cases of tuberculous empyema. In many cases the effusion is serous at the onset.

3. Tuberculous pleurisy may be primary, or it may be secondary to a pulmonary, peritoneal, or other tuberculous lesion.

4. The onset of a tuberculous effusion may be insidious or it may be sudden and associated with an acute and severe constitutional reaction. A mixed pleural infection due to the perforation of a tuberculous cavitation often runs an acute and rapidly fatal course.

5. Diagnosis of tuberculous empyema is made by demonstration of the bacilli in the exudate, by animal inoculation, or by examination of the sectioned pleura.

6. A sterile effusion is probably tuberculous. An infected effusion may be tuberculous.

7. Empyema following primary idiopathic pleurisy with effusion, or empyema of insidious onset, especially in the presence of a pulmonary or other tuberculosis condition, is probably tuberculous.

8. Empyema may be tuberculous in spite of persistent negative findings over a long period of time.

9. In a closed pleural cavity a sterile effusion, whether serous or purulent, should not be treated by open drainage, except in the presence of an impending perforation of the chest wall.

10. Repeated aspiration of only part of the fluid is indicated in cases of serous effusion producing definite dyspnea on exertion or symptoms of circulatory embarrassment.

11. The replacing of aspirated fluid by nitrogen or filtered air may be indicated in cases in which there are symptoms of active phthisis referable to the same side as the effusion.

12. A sterile purulent effusion should be treated as though it were serous if the lung expands when fluid is withdrawn. If the lung is fixed in a collapsed condition or if the effusion persistently recurs, an extrapleural plastic operation is indicated.

13. Effusion in a closed cavity showing a mixed infection should be treated by the closed method with antiseptic solution irrigation or by open drainage; the open drainage is indicated especially in cases of severe infection associated with extensive pulmonary tuberculosis, making irrigation hazardous.

14. Tuberculous empyema with a large bronchial fistula should be drained by the open method.

15. A large tuberculous empyema with mixed infection from a previous drainage operation or from spontaneous perforation of the chest wall requires a plastic operation, preferably after treatment with Dakin's solution.

16. A plastic operation involving closure of a bronchus offers the only prospect of cure in case of an associated large bronchial fistula.

17. Dakin's solution irrigation may be contraindicated in the presence of an extensively diseased lung, owing to its corroding action on any superficial lesion, possibly resulting in hemorrhage or the formation of a bronchial fistula.

18. A plastic operation is usually eventually required in the case of closed cavities when the empyema is of long standing, and of all large open secondarily infected cavities.

19. An extrapleural rib resection is indicated for the collapse of closed sterile cavities. The Bouffin-Wilms operation (Freidrick) is especially suitable for the collapse of large cavities without excessive thickening of the parietal pleura or rib deformity.

20. A skin or skin muscle plastic operation is indicated for the obliteration of relatively small cavities. Cases of long standing associated with greatly thickened pleura require an extensive resection of the entire chest wall after the method of Schede.

21. Operation in several stages is especially indicated in the treatment of tuberculous empyema, and, if practicable, it should be preceded by antiseptic solution irrigation. Such treatment should extend the indications for operation and should lower the postoperative mortality.

DISCUSSION

Dr. M. M. Grove, (Dell Rapids): I think Dr. Hedblom has left very little for me to say regarding the treatment of tuberculous empyema. My experience with the treatment of these cases has been very limited. However, there are several points that are important in the treatment of tubercular empyema, as well as in cases of empyema, and these are free drainage, sterilization of the pleural cavity, and normal expansion of the lung.

Various methods were developed during the recent war, some complicated and others very simple. I think the important things, in the treatment of any case of empyema, and particularly tuberculous empyema, are plenty of fresh air, good nourishing food, and exercise. I feel with Binnie, of Kansas City, who, in an article in the *Archives of Surgery*, states that, regardless of the fads and fancies and complicated treatment of cases of empyema, the fundamental principles of surgical treatment have been very little changed.

Dr. Hedblom (closing): The only point I want to emphasize is, that a sterile pleural effusion should not be drained by open drainage even if it is purulent.

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WHEN SHALL WE OPERATE FOR MASTOIDITIS?*

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It is to be understood that in the consideration of this topic, I am confining my remarks to acute, uncomplicated mastoiditis.

In every case of suppuration of the middle ear there is probably an involvement of the adjacent mastoid cells. The inflammatory process in the cells may terminate in resolution, but does not always do so, and it frequently results in destruction of the bony structure, with the danger of serious or fatal complications. As long as it is possible for the patient to recover spontaneously, there is no warrant for operative interference, but as soon as it can be determined that resolution can not be expected, a complete mastoid operation should be performed at once.

Here it is that there is demanded of the surgeon a nicety of judgment that can only be the result of a thorough knowledge of mastoid pathology, complete laboratory data, and the ability to weigh symptomatic evidence that is the outgrowth of rich experience that has been properly assimilated. However, there are certain signs

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and clinical manifestations which, if given due consideration, will enable us, in the great majority of instances, to arrive at a correct decision as to when to operate. It is advisable to establish a classification and description of the symptoms of mastoiditis, and these I will place under three headings: subjective, objective, and laboratory.

Subjective.—Pain in and around the affected ear, often of a dull, heavy character, radiating up to the parietal region and intensified by the recumbent posture or by jarring movements. This pain may be suddenly alleviated following a perforation of the inner table or the floor of the mastoid, but, in the latter instance, the rapid development of a Bezold abscess soon refers the pain downward along the region of the occipital triangle, and we have a most disagreeable complication added to the original mastoiditis. Hearing is impaired, and there is tinnitus of a roaring character accompanied by a sense of fullness and throbbing.

The mastoid region is tender to the touch, particularly at three points, although it is only in the more pronounced cases that tenderness at all of them at once is complained of, beginning with the point of least signficance, the tip of the mastoid. Next in importance is the area immediately over the antrum. Marked tenderness over the third point, at the emergence of the emissary vein, shows a greater extension of the pathological process, and I will say that I have never seen a case in which this symptom was well developed that did not have to come to operation. Slight vertigo is not uncommon, but the sudden onset of this symptom to a marked degree, especially if accompanied by complete suppression of hearing, is of the most serious significance, as it shows involvement of the internal ear.

Objective.—In the majority of cases we find a discharge of pus or sanguinous fluid from the external auditory canal, the profuseness of the flow depending upon the size of the perforation in the tympanic membrane, and also upon the extent of the suppurative process in the mastoid cells.

The amount of discharge, then, is of significance, but it must be borne in mind that mastoiditis of the most pronounced character may exist without there ever having been a perforation of the drumhead at all. In fact I have seen a Bezold abscess occur in just such a case, where the patient refused operation because he did not have a discharging ear.

Inspection of the canal wall will reveal, in many cases, a marked sagging at its upper, posterior aspect, almost continuous with the tympanic membrane, and often covering it to a considerable extent; and, if the perforation is not large enough to afford free drainage, the drumhead is generally red and bulging. A thorough examination of the perforation area, after cleansing the canal, will often enable the observer to see a distinct pulsation of the exuding fluid, and this sign has been regarded by some as a positive indication for operation, but cases presenting this sign frequently terminate in resolution.

In children the tissues of the scalp about the affected ear are not infrequently swollen, so that the ear protrudes further from the median line than its fellow, but this must not be confounded with subperiosteal abscess.

The facial aspect of the patient should in no wise be ignored, and in fact the expression of suffering, the haggard, anxious look with the color that is indicative of sepsis, give the attentive observer infallible evidence that something is radically wrong. The temperature range is variable, and is of no great diagnostic significance, as we frequently find marked pathology in cases where the fever has been slight, and again a high temperature curve may be associated with a comparatively mild degree of bony disintegration.

Laboratory Findings.—A bacteriological examination of the discharge should invariably be made, as some organisms are more virulent than others, and their presence should have weight in influencing our decision as to probable pathology in the mastoid cells.

Staphylococci, influenza bacilli, pneumococci and streptococci, either mixed or more rarely in pure culture, are found, but the two latter produce by far the more rapid disintegration of the structures involved, and I am inclined to the belief that where streptococci infection exists the inflammatory process will never terminate in resolution.

Leucocytosis is constant in these infections, but it may be the result of the general systemic infection, which is primarily responsible for the aural invasion and should be looked upon from this angle, but in the polynuclear count we have a sign of the highest importance, a high reading

pointing, as it does, to an invasion of the bony cells.

The radiogram gives indisputable evidence of involvement of the mastoid cells and should always be given the highest consideration.

A review of the symptoms of mastoiditis shows that the diagnosis of this condition offers no great difficulties to the trained observer, but we have not found any one sign that will afford us positive information that the mastoiditis has progressed to a point where the cells contain pus and so rendering the termination by resolution as impossible.

Is there, in fact, any sign or symptom which gives infallible evidence that there is pus in the mastoid and that the condition cannot terminate in resolution, with complete restoration of function in the affected ear and not incompatible with perfect health on the part of the patient? Positively, no.

Cases presenting indisputable evidence of mastoiditis, with profuse discharge, great tenderness, sagging of the canal, pulsation of the exuding pus, positive radiogram, and high polynuclear count, have made complete recovery without operation.

There are three great factors which we should keep in mind: the severity of the infection, the powers of resistance of the patient, and, as I have elsewhere pointed out, the anatomical structure of the mastoid cells.

Small cells withstand infection much better than large ones, as the smaller the cell, the greater the proportional surface from which bacteria-destroying leucocytes can emerge on their beneficent mission.

A consideration of the age and general condition of the patient will be of value, as in the case of a person who is reduced in vitality by previous disease, such as pneumonia or some one of the eruptive fevers, the pathological changes in the bone progress with greater rapidity than where the aural infection is only the direct outgrowth of what is ordinarily termed a "head cold," and the balance will be on the side of an operation.

The surgeon should be conservative, but conservatism does not mean delay and when one bears in mind that you never can tell just how bad a state of affairs exists till you open the mastoid, it will be seen that there is a heavy burden of responsibility on the shoulders of the conscientious practitioner.

The surgeon must be, in a measure, a law unto himself according to his knowledge and experience. A favorable outcome cannot be expected when pus has formed in the mastoid cells, for it is at this time that the bony wall begins to disintegrate, and resolution becomes impossible.

Irrespective of all the various symptoms by which we recognize that mastoiditis exists, I would say that when the pain and tenderness show no tendency to subside, when the discharge from the ear persists or increases in quantity, and the general condition of the patient is not improving, it is time to make a complete exenteration of every mastoid cell that can be found.

DISCUSSION

Dr. R. D. Alway (Aberdeen): There are two classes of mastoid cases that I think require more judgment in knowing when and when not to operate than any of the others. Some of these patients come in with all the classical symptoms and your diagnosis is made for you, and we know an operation should be performed, but in the class with the deep-seated constant pain, with only a mild amount of discharge, with a moderate increase in leucocytosis, no swelling, nor sagging of the posterior superior wall, it is dangerous to temporize, especially if the infection is of the streptococcic variety, as it does not take long for intracranial symptoms to supervene and you have a complication that warrants you in trying to save the life of the patient.

There is another class of the non-painless variety where you have nothing but a profuse otorrhea and where it is more profuse than at the time the drum was perforated, and where probably there are absolutely no tenderness and no swelling. These cases go along; they are not confined to bed; your Röntgen ray findings may not be clear. It is hard to get these patients to submit to an operation. Six of these cases have recently been reported in *The Laryngoscope* where there was lateral sinus thrombosis following the primary operation. These are really dangerous cases because you do not know how far the process has extended or is extending. I do not believe it is a great crime occasionally to open an innocent mastoid. It is a conservatism which is commendable, but, if you are going to wait until all the symptoms have developed, thus making operation obligatory, as I said before, the question is one of choice from an operation on the mastoid to the possibility of saving the patient's life.

I am going to report briefly a case that some of the members here have seen. A boy, nine years of age, last Thursday had a very severe blow over the left mastoid. He had excruciating pain all that night. Towards morning the pain disappeared and he was comfortable until Sunday, when he had a severe chill followed by a high fever. Monday afternoon I saw him when he had a temperature of 104,° with extreme sensitiveness on deep pressure over the mastoid, but no post-auricular swelling and no discoloration or bulging of the drum membrane, nor any change in the external auditory canal. The Röntgen ray showed a cloudy mastoid, and

he had a leucocyte count of 37,600. His temperature went up that night to 105°; the following morning there was a slight remission; along in the afternoon it reached 103°, and he looked like a very sick boy with anxious expression. A chest examination revealed bronchial râles and a little cough. Wednesday his morning temperature was 102°, and the leucocyte count had increased to 47,000. I had his chest examined again, and also an *x*-ray examination made which showed he had lobar pneumonia. In the meantime the tenderness had left the mastoid, though he still seemed hard of hearing. Had I operated Tuesday morning under ether anesthesia I might have had a fatality. I think it is important that all our mastoid cases should have a thorough physical examination.

Dr. C. C. Hoagland (Madison): Dr. Franchere has presented an excellent paper. The more I see of suppurative middle ear disease the more convinced I am of the truth of his statement, that there is some involvement of the mastoid cells in practically every case of suppurative otitis media. External swelling and tenderness do not occur as long as there is sufficient drainage through the aditus, drum membrane, and Eustachian tube.

The essayist states that if mastoid tenderness and swelling do not subside within a few days, operations should be performed. I feel that there is some danger in this conservative attitude, and that we should consider a tender mastoid as much of a menace to the life of the individual as a tender appendix. It is true that many of these cases will recover without operation, but we must not lose sight of the serious complications of mastoid disease. In the last three months I have seen in consultation one case of otitic brain abscess and two cases of sinus thrombosis occurring early in the course of acute mastoiditis. The symptoms of otitic brain abscess developed before the drum membrane had perforated and before the mastoid became markedly tender, which shows how easily and quickly infection can pass from the mastoid and middle ear to the dura by way of a thin tegmen. One case of sinus thrombosis involved the jugular bulb without any necrosis of the inner table over the lateral sinus, the infection evidently passing through dehiscences in the floor of the middle ear.

When we consider the relative thinness of the inner table, as compared with the outer cortex of the mastoid, we can well be anxious over any case of suppurative otitis which develops even slight external swelling and those patients generally got well. On the other hand, we have often procrastinated to the detriment of the patient. When we see a case of acute otitis media of some days' duration, the question is not, has this patient mastoiditis? Every case of acute otitis media becomes complicated with mastoiditis within a few days after the onset of the pyogenic infection of the middle ear. And the question becomes, Shall we in the interest of this patient operate?

The kind of cases which are most common and make us feel our responsibility keenly, are the acute, which seem to be improving, but show improvement and exacerbations alternately.

As to whether surgical intervention is necessary, depends on what Dr. Franchere mentioned in his paper, whether the bony partitions of the pneumatic cells are breaking down. If the bony structures are breaking down operation is imperative; if not, the patient will likely get well without surgical intervention.

The method of examining for bone debris is simple. The auditory canal is first cleaned by cotton wrapped around a probe saturated in alcohol. A smear of the pus is made and lightly stained with hematoxylin solution and examined under a one-sixth objective. The presence of broken-down bone structures is indicated by black irregular particles which are characteristic and positively indicate operation.

Dr. L. G. Hill (Sioux Falls): I want to compliment Dr. Franchere on his beautiful general picture of the indications for mastoid operations. The picture must be a general one. There seems to be no one symptom that we can tie to that indicates a mastoid operation or the necessity of doing it. There must be a general picture of the whole symptoms.

I want to emphasize one point that the doctor touched on. So many patients feel and even physicians advise that when there is no discharge or perforation, an operation is not indicated. I recall a patient recently who lost his life on account of this advice. He was a husky, strong young man who had a severe earache and definite mastoid infection. He consulted a physician after having earache for some time and was told that there was no need of operation because there was no discharge, and why worry. About a week later I was called to an adjoining town to see this patient, who was dying of meningitis. I am sure that if he had received the right advice and had been operated on, his life might have been saved.

The pulsating we get in all discharging ears and we can attach very little importance to it. The case I have mentioned shows the importance of early operations and we must not always wait for a discharging ear.

Dr. Franchere (closing): The point that I wished to bring out, is when to perform the mastoid operation.

I am not as radical in my opinion about this matter as I was ten years ago. The experience of having six cases go on to complete recovery after refusing a mastoid operation, which I had advised, has made me more conservative, but I still believe that, for the best interests of the patient, it is better to operate early than to run the chances of having waited to long.

Again, there is no way of knowing what is going on in the patient's system during the sometimes long-drawn-out convalescence while the mastoiditis is undergoing resolution, and there is no doubt in my mind but that early operation favors conservation of hearing.

It must be borne in mind that it is not the number of operations that a man does that marks his ability as a surgeon, but the justification he has for doing them.

CASE-REPORTS PRESENTED BEFORE THE MINNESOTA ACADEMY OF MEDICINE

Meeting of November 9, 1921
Dr. H. L. Staples, Presiding

Dr. George Douglas Head reported the following cases:

Case 1. *Chronic adherent pericarditis.*—Chronic adherent pericarditis manifests itself in clinical forms often difficult to interpret. There is the silent type of the disease, in which the condition is discovered only at autopsy, and the patient gives no evidence during life of its existence. There is the second, the cardiac, type, in which the patient presents the usual picture of advanced cardiac disease with partial decompensation. These cases are frequently interpreted as chronic endocardial or myocardial lesions, and with this diagnosis they go to the autopsy table. There is the third form of the disease which might be well called the cirrhosis of the liver type, which is not so well recognized and understood and which is frequently misinterpreted. In this condition, recurring ascites, enlargement of the liver, and ill-defined cardiac signs dominate the picture. These cases are often puzzling because they present the signs of cardiac decompensation, without the high-grade edema of the lower extremities usually manifested in this condition. The case which I have here to report is a typical example of the cirrhosis of the liver type of chronic adherent pericarditis.

Mrs. H. B., aged 27, married, no children. Gives a history of normal health up until about eight years ago, when she had an attack of acute inflammatory rheumatism, from which she recovered without complication. The tonsils were removed three years ago. She had a right-sided pleurisy with effusion in 1919. The same year she also had an attack of influenza, after which time she did not recover her usual health. One year ago this fall she first noticed a swelling in the abdomen. It came on without pain. When she lay down and kept quiet the swelling went away in two or three weeks. When she remained upon her feet it returned. The swelling in the abdomen was not associated with any marked swelling in the legs. She did, however, have some puffiness of the face, also some cough. She also noticed that her breath was getting short, especially if she walked fast or climbed stairs. Her appetite was fair, and she slept well. She went into a hospital at St. Cloud and was kept in bed for four or five weeks, when the abdominal swelling disappeared. She then got up and about, but as soon as she got on her feet again the abdomen began to fill, and again she went to the hospital where she was put to bed and the swelling in the abdomen disappeared. She was told that the abdomen was full of fluid. She had no nosebleeds; the bowels were regular; and she had no fever. The enlargement of the abdomen, with the presence of fluid, has now returned the fourth time.

Examination: Patient was a woman of slender build. Marked cyanosis of the lips and cheeks, and a choked appearance to the face. Physical examination was negative for organic disease outside of the enormously enlarged heart, with signs of an adherent pleuritis in the right lower pleura and the large amount of fluid in the abdomen, with some enlargement of the liver. There was slight edema of the lower extremities. The heart was of tremendous size, the left border being at the anterior axillary line, the right border about 6 cm. to the right of the midsternal line. The heart was fixed in its position. In spite of the tremendous size of the heart no murmurs could be heard at any of the orifices. A distinct systolic tug, Broadbent's sign, could be made out in the fifth and sixth interspaces on the left at the outer margin of the cardiac area of dullness. The sounds were of good quality. The heart was very steady, about 95 beats to the minute. The abdomen contained a large amount of fluid. In a sitting position it reached to the transverse umbilical line. The liver was palpable about two finger-breadths below the costal margin in the mammary line. The Wassermann was negative. The urine findings were negative except for a trace of albumin. The blood showed a mild secondary anemia. The clinical diagnosis of chronic adherent pericarditis was made, which the *x*-ray findings confirmed. You will notice in the films I have here calcareous plates imbedded in the pericardial wall, outlining very distinctly the pericardium in close proximity to the heart wall. In that position of the pericardium resting against the diaphragm, the calcareous deposits present a continuous solid wall, showing a gluing together of the pericardial surfaces and the heart wall. The condition is incurable but the patient may be able to survive a number of years under proper methods of living.

Case 2. *Chronic mitral disease of the heart, with pneumonia and fibrinous casts of the bronchial tree in the sputum.*—Mrs C., aged 45, married, no children. Ill for many years with chronic endocarditis of the mitral valve, mitral stenosis and insufficiency. Had maintained a fair degree of compensation until April 17, 1921, when she began to have severe attacks of dyspnea, associated with cyanosis and numerous râles of the sibilant and moist bubbling type throughout both lungs, anteriorly and posteriorly. The heart was rapid and the heart sounds rather feeble in quality, with a loud double murmur at the apex area, transmitted toward the axilla, and an accentuated pulmonary second sound. The attacks of dyspnea were severe. During the attacks the heart became rapid, 120 to the minute. The patient was required to sit up in bed to get her breath. The sputum was frothy, tinged with blood, and mucopurulent. About half a cupful of this material came up during a paroxysm.

The diagnosis of acute edema of the lungs was made, associated with chronic endocarditis of the mitral valve. From this time until October 10, 1921, the patient was seen at various times. On September 8th she developed a sudden severe attack of pain in the region of the spleen, which was interpreted as an embolus with infarct in the spleen. On September 24th she complained of an attack of pain in the lower right chest, associated with increased cough, which was interpreted as an infarct in the lower lobe of the right lung. On October 10th the patient was again seen with fever, cough, signs

of consolidation in the base of the right lung behind and a leucocytosis of 18,200. At this time a diagnosis of pneumonia of the lower right lobe was made. On October 12th after a severe coughing spell, accompanied by a good deal of dyspnea and cyanosis, the patient coughed up a solid plug of fibrin showing the branching arrangement of the bronchial tree. (Water-color. drawing exhibited.) The patient was then relieved for a number of days, when, on October 19th, a much smaller fibrinous cast was coughed out, and again, on November 7th, a much larger solid plug was gotten out after a severe fit of coughing. The patient was much relieved after each of these plugs was coughed out. The examination of the plug and of the sputum coughed up following the plug showed large numbers of pneumococci, with a streptoccus viridans in the culture from the sputum. (Specimen exhibited.) Since the coughing up of the last plug the patient's condition has improved steadily. In the struggle to get out the fibrinous casts, the patient's heart became very much tired out, and she presented all the signs of a high-grade decompensation, with considerable edema of the lower extremities. The administration of hydriotic acid or potassium iodid seemed to be of considerable help in loosening up the bronchial casts.

CASE 3.—*X*-ray photographs were shown of the long bones of a case of osteomalacia in a patient, Mrs. John T. aged 57. The *x*-ray photographs were shown through the courtesy of Dr. Ernest L. Baker, with whom the patient was seen in consultation. The features in differential diagnosis were discussed. The Wassermann was negative in this case. No Bence-Jones body in the urine. The blood smears showed no evidence of malignant disease of the bone or of the bone marrow. No spontaneous fracture had occurred at any joint. No metastatic growths had developed at any point in the body, all of which features were considered sufficiently good grounds for the exclusion of myeloma or malignant disease. No Turck's irritation forms, myeloma, or other abnormal cells were found in the blood. The *x*-ray pictures, while showing diffuse, generalized rarefication areas throughout all the bones rayed, did not present the usual picture of a malignant disease of the bone or bone-marrow. The case will be reported in full at a later time by Dr. Earnest L. Baker.

DISCUSSION

DR. A. SCHWYZER. (St. Paul): The second report given by Dr. Head is a very rare condition of which I happen to have seen two cases. They were here in my own practice.

In the first case I saw I put one of the casts between two glass plates, and it was considerably larger than this one Dr. Head has shown. It was so large that after floating it in water you could put a good-sized lead pencil into the largest bronchial tube. The patient had casts every two or three months. The woman felt severely ill and became cyanosed, but had no fever. All at once she would have a severe coughing attack and was relieved after removal of the cast. I do not remember the later history.

The second case was not quite so severe, and was more of an acute condition. Judging from the size of the largest tube, the cast must have been from the bronchus of the lower lobe at least.

DR. W. H. CONDIT reported the following cases:

CASE 1.—*Rupture of pregnant uterus.*—Mrs. O. D. Past history: Negative for any severe illness. Patient aged 27. Gravida two. Three years ago had first pregnancy, went to full term and was said to be in labor for one week with moderate pains, when she was operated on by Cesarean section and delivered of a full-term child, said to weight 10¼ pounds, now living. The puerperium was complicated by peritonitis and drainage, phlebitis of the left leg, and she was confined to bed five weeks.

Present history: On June 21, 1921, she consulted me for care in her expected confinement—then in her fifth month. She made monthly visits at the office and had an uncomplicated antepartum period. Expected date of maternity, November 29, 1921. On September 26, 1921, the patient had mild pains in the abdomen early in the morning. Had a luncheon at 11 o'clock, consisting of canned beans. At 2 o'clock was seized with an extreme pain in the abdomen and vomited up her luncheon. She was admitted to the hospital at 3 P. M., suffering from severe abdominal pain in the upper abdomen in the region of the gall-bladder and some pain in the appendiceal region.

Examination: Abdomen quite distended and extremely tender all over. Hemoglobin was 65 per cent; leucocytosis, 19,400; urine, normal. No rhythmical contractions to suggest labor pains, having general disseminated pain over the whole abdomen. Consultation at 6 P. M., 8 P. M., and 11 P. M. resulted in the decision that the patient was not in labor. Sedatives, morphine, and choral were given at 11 P. M., 1 A. M., and 5:20 A. M. At 10 A. M. the patient was much more distended. Leucocyte count was 22,000; pulse, 140; temperature 100.4.° A diagnosis of intra-uterine or intra-abdominal hemorrhage or both was made, and immediate operation advised.

Operation: Incision was made parallel to the old abdominal scar. Uterus was hard, contracted with a wall 3 cm. thick. This suggested immediately a myomatous uterus with an abdominal pregnancy, as a water tumor was palpable extending from the fundus up against the diaphragm. This was ruptured and did not contain the fetus. A rupture of the uterus was found through which the membranes with the entire amniotic fluid had been delivered, and the buttocks of the child presented. This rent was enlarged, and the fetus and placenta immediately delivered. The uterus was sewed with three layers of chromic gut, and the abdomen was closed as quickly as possible, the patient being in quite extreme shock. Stomach lavage before returning to room, twice daily for two days. Forty-eight hours after delivery the patient was in good condition.

CASE 2.—*Recurrent abdominal pregnancy.*—Mrs. R. T. H., aged 27, admitted to the hospital April 8, 1920, with a diagnosis of acute appendicitis, complicating a six months' pregnancy. The last day of the last menstruation, October 28, 1919. First noticed pain December, 1919, and was in bed until February 19, 1920. Pain was very severe. The patient lost rapidly in weight and strength. She was married six years ago, lived with her first husband two years, was then single two years, and has had two miscarriages since the second marriage—both of two months' gestation. Her menstruations had always been regular twenty-eight day type, beginning at the age of 13 and always normal. Blood

pressure on examination was 130 systolic, 70 diastolic. All other functions and organs normal. Hemoglobin, 58 per cent; leucocytes, 13,280; P. M. N., 84; R. B. C., normal; Wassermann, negative.

X-ray plate shows a fetal skeleton in mid-abdomen of at least six month's gestation; fetal heart sounds present. To the right of the large tumor, which undoubtedly is the membrane with the fetus, is a hard mass, which is no doubt the uterus.

Abdominal pregnancy was suspected, but no definite diagnosis made. After one week confinement in bed, the patient was dismissed with instructions to report if pain became worse or if she had any bleeding. No fetal heart sounds heard; diagnosis of death of fetus was made.

On May 25, 1920, the patient called at the office with a bloody discharge from the vagina and extreme abdominal pain. Operation was done the following day.

The uterus was found to be crowded under the right side of the symphysis pubis. The fetus was in the amniotic sac, macerated and deformed. It was removed, and the peritoneum was stitched to the border of the placenta, which filled the whole lower pelvis. Any attempt to remove placental tissue was accompanied by profuse bleeding. The wound was lightly packed and left for nature to dissect off the placental tissue. The patient was confined in bed seven weeks and left the hospital at the end of the eighth week in good health, and she continued in good health at her regular duties of a clerk until May, 1921.

At that time she began having abdominal distress, accompanied by nausea, vomiting, inability to retain any food other than milk. She had one mensturation in June, and flowed for two weeks in July. On July 28th, her hemoglobin was 78 per cent; leucocytes, 11,200; P. M. N., 83; R. B. C., 4,000,000. She had a large abdominal tumor the size of her head. This tumor was soft and very tender under palpation. The diagnosis of an acute abdomen with the possibility of another abdominal pregnancy was made. Operated the 30th of July, and a live, three and one-half months fetus was found intact in the membrane. Hemorrhage was most severe following delivery of the fetus. A five-yard roll of gauze was packed in the wound and left for four days, when we began removing it fractionally. The placental attachment was on the parietal peritoneum on the left side. The patient had an uneventful convalescence and is at the present writing in good health.

Dr. H. L. Staples reported a case of hysterical hyperpyrexia.

A young healthy married woman had engaged in an exhausting horseback race, and also received very disturbing news concerning her husband. Menstruation just established. That night she had a severe chill with a sharp rise of temperature and nausea and pain in the left ovarian region. The next day a more pronounced chill with higher temperature. Menstruation ceased. The third day the chill and temperature of greater severity. The fourth day the same condition continued. The heart, lungs, urine, and blood were normal. No abdominal rigidity. Quinine had no effect on the chill or the temperature. The uterus and appendages apparently healthy. The fifth day severe chill lasting over an hour followed by temperature of 107.° A disturbing letter that morning received. The forenoon temperatures were nearly normal. No regular time for evening chill. She was removed to the home of her mother, and more favorable news was received. Aside from a slight weakness at first she had been perfectly well since the fifth day.

This is a purely psychic condition induced by emotional disturbance. Some authors deny the existence of such a state.

Dr. A. Schwyzer reported the following cases:

Case 1.—*A case of very large and movable cystic gall-bladder.*—The patient, a woman aged about 35, had been advised to use a belt for her "floating kidney." This mass flopped back into the right kidney lodge, and could be pushed entirely beyond the midline over to the left. It was possible to make out its attachment to the liver. A diagnosis of cystic gall-bladder could thus be made. The patient also had an interesting appendix. Six years before I had advised operation for appendicitis. The proximal half of the appendix was rather normal in appearance. The distal half was like a small plum, a little larger than the distal phalanx of a thumb. It represented a cystic remnant of an old perforating appendix. On freeing the tip from the mesentric border of a nearby ileum loop the contents of the cystic appendix, a purulent slime, came partly out. There was a cavity of 1 cm. diameter at the mesenteric border of this ileum loop.

Case 2.—The second case, which had been operated on in the morning, showed a *large gall-bladder* which we had to remove, together with some liver tissue, as it was impossible to separate it from the liver. Two large and *nine smaller acute perforating ulcers* were the cause of this. It was an empyema of the gall-bladder with large stones. The pus was under great tension and let the gall-bladder appear very hard. The patient, a woman, was sixty-four years old. The two large ulcers were old and really healed, only representing diverticula-like depressions with a very thin wall. The nine small ulcers were all acute and from four to six millimeters deep. The area of these ulcers corresponded on the outer side with the area where liver tissue had to be taken along with the gall-bladder. Thus we avoided spilling any of the pus.

Dr. J. G. Cross presented a case of hypernephroma.

Mr. H. A. M., aged 58, traveling salesman; of excellent family and personal history; rather overweight and somewhat florid. It was learned that he had consulted a physician because of an appearance of blood in the urine in 1917. The patient stated that he was cystoscoped, with no positive findings, and the blood cleared up after two or three days. The patient stated that to his best recollections he was told that he had probably passed a small stone, and that he probably would have no further trouble. As the hematuria cleared up after two or three days and did not reappear, this was presumed to be correct.

In 1918 he was found to have a trace of albumin and a few hyaline casts in his urine, the diagnosis at this time being a mild chronic interstitial nophritis.

In December, 1920, the patient noted a blurring of his vision. His physician, Dr. Willcutt, made careful physical examinations, including that of the urine repeatedly, with negative findings. An oculist made one or more changes in his glasses which apparently did not help his vision, the blurring continuing to be slightly troublesome. The patient was otherwise well and continued at his occupation as traveling salesman.

On the evening of March 3d he was one of a party at his club and ate heartily that night of a duck dinner. During the evening while playing cards with his brother and two other friends he evidently had a cerebral insult with a tonic convulsion. He was taken to Hillcrest Hospital in an ambulance, where I saw him at midnight with Dr. Willcutt.

Examination at that time showed that he was perfectly conscious and intelligent, but had a motor aphasia with partial loss of power in the right arm and leg with some relaxation of the facial muscles on the same side. Pupils were unequal, but reacted. There was a positive Babinski and Oppenheim on the right. No other reflexes were examined at that time. Urine obtained at this examination showed a three plus albumin, no sugar, but loaded with hyaline and granular casts. No blood was noted at this time. Examination of the urine the next day showed very marked improvement in the urine with a normal output, and in a few days an entire disappearance of both albumin and casts. Speech was entirely normal on the second day, and aside from a slight headache and weakness the only complaint was pain in the back, which was attributed to trauma incident to his convulsion. The pupils continued unequal, but other reflexes were normal after the second day. Blood pressure was 150 over 95.

He remained in the hospital for about one week, and was apparently making an uneventful recovery. He went home and continued in bed for about six weeks. There was nothing noteworthy in his condition during this period except for a marked tenderness low down in the back. About this time the patient began to have a very low temperature, usually going up to about 100° in the afternoon. This lasted for about three weeks, and no apparent cause was found. There was slight edema noted only in the middle third of both legs. The urine until this time had remained practically constant, showing a specific gravity of 1,020, and a trace of albumin, with no hyaline or granular casts, microscopic examination showing only an occasional pus cell. At about this time, however, for one or two days only the albuminuria was slightly increased, and granular and hyaline casts were again found in the urine. This condition, however, immediately cleared up again. From this time onward the patient began to complain of headaches, which were increasingly severe. These headaches were distinctive in that they had their onset about four o'clock in the morning and would let up about noon, after which he would feel comparatively well for the rest of the day. They were located by the patient as over the temporal portion of the skull. There was a remission in his symptoms for two or three weeks, during which time he was more active than before—riding out and even changing tires on his car. The attacks, however, returned with greater severity than before so that it was thought advisable on one occasion to give him morphine hypodermically but without any result. They were influenced slightly by aspirin or phenacetine.

The characteristic headache in the early morning and remission in the latter part of the day continued as before. The patient, however, had more nausea with his headaches, and lost in strength. Urinalysis at this time did not show any increase of renal symptoms. Blood chemistry never showed any retained nitrogen or increase of creatinin content. Wassermanns were always negative.

No greater complaint was made of vision, but ophthalmoscopic examination made by Dr. McCarthy and myself showed such marked changes in the disc that an oculist was immediately called, who pronounced the condition one of beginning optic neuritis. Examination of the patient's eyes from this time on showed progressive increase in this condition until the typical choked disc appearance came on in both eyes. Blood pressure varied from 120 over 90 to 170 over 110.

In view of the increasing headaches and the optic neuritis, Dr. A. S. Hamilton was asked to see the patient about the 25th of June. He did not feel that there was sufficient evidence of brain tumor to justify operation, especially in view of the fact that there were no localizing signs of any kind. At this time, however, the patient complained of difficulty in using the muscles of the right side of the face. To the observer, however, this was perfectly normal. *X*-ray plates were made of the skull, which did not show any signs of increased pressure. The condition became progressively worse, and on July 9th the patient became comatose, and he was again seen by Dr. Hamilton and also by Dr. Corbett, and a decompression was done the same night. Intracranial pressure was very great. Following the decompression the patient was badly disoriented mentally, but had an auditory aphasia. For two days following the operation he passed a large amount of blood in the urine. This, however, cleared up after this time. The patient returned to his home after a stay of ten days in the hospital. He had marked bulging over the decompression area.

At examination on July 25th it was noted that the mental coördination was fair only; speech, somewhat thick; hearing, very poor. The mental coördination was so poor that we were unable to obtain satisfactory results from the Rinne and Weber tests. The left eye seemed somewhat protruded. The left corner of the mouth was drawn down. The reflexes of the right arm definitely, not as active as those of the left. Muscular power of the left less than of the right. Reflexes and muscular power apparently normal in both legs. Pointing tests, normal. Blood pressure, 120 over 70.

Condition continued about the same until August 5th, when he was again operated on by Dr. Corbett, who was, however, unable to remove the tumor.

The patient died two days later.

The autopsy revealed an hypernephroma of the left kidney as the primary growth. The brain of such size as to obliterate the left ventricle by pressure. Photographs of both tumors and microscopic study proved that the two tumors were similar and therefore associated, the brain growth being metastatic.

Harry P. Ritchie, M. D.
Secretary.

THE
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DECEMBER 15, 1921

DR. ADOLPH LORENZ

The famous Vienna orthopedist has arrived in New York, ostensibly to return some of the courtesies extended to Austrian physicians by offering to see a number of orthopedic cases where the persons are too poor to avail themselves of the services of a surgeon. Apparently it is his purpose to visit other parts of the country, for he is scheduled to appear in Chicago and Minneapolis, and probably at Rochester. His visit has created a good deal of variation of opinion in that some of the surgeons feel that he is over here, not altogether for the purpose of relieving the sick poor, but incidentally to avail himself of the opportunity to see cases in consultation, privately, and charge fees therefore. The result has been that some of the hospitals in New York have declined to permit him to conduct his clinics in them, and the word has gone forth that Chicago also will bar him from such professional opportunities as are usually extended in courtesy to a visiting surgeon. This attitude created a good deal of discord in Chicago, and Mrs. Mitchell, who was formerly Miss Armour whom he relieved of double congenital hip dislocation, was very emphatic in her denunciation of the methods of the Chicago hospital group, claiming that even if he relieved but one case that patient was entitled to the benefit of his advice and treatment.

Minneapolis is on the right side, so far as one can tell, in that the superintendent of the Minneapolis General Hospital has offered Dr. Lorenz its clinical facilities and an opportunity to treat the cripples who may come there to see him. The general impression prevailed in the Hennepin County Medical Society that we would be remiss in our duty and that we would stir up a controversy which would be unfortunate for us, if we did not at least recognize Dr. Lorenz, and extend the courtesy of the hospitals of the city to him. It is not necessary that the Hennepin County Medical Society invite him to come here, but it is advisable that the medical profession do not oppose his efforts or methods. The argument in favor of this reception is that it will stimulate the orthopedists and other surgeons to do better work and to relieve any situation that is pressing in the orthopedic field. Incidentally, too, it opens up an avenue of ethical advertising in that we have orthopedic surgeons here, and not only in Minneapolis and St. Paul, but in Rochester, who are neither narrow-minded nor unwilling to learn from Dr. Lorenz' vast experience. And, if Dr. Lorenz can see cases privately and receive fees therefore, why should we object? He probably needs the money, as do most of the foreign surgeons and medical men. This we know, because money has been sent to Austria through many of the old students who studied in both Germany and Austria. Through a dispatch from New York, the newspapers inform us that the matter has been settled as far as New York City is concerned by the withdrawal of any fees which Dr. Lorenz has earned in private, that is, the withdrawal of his services under those circumstances.

The disadvantages are not to be overlooked. It seems evident that he has been besieged by orthopedic cases in New York, particularly among the poor, but by those who are able to pay as well, and that he has worked at high speed and under great pressure, and doubtless this will follow him throughout his trip through this country. Here, again, the greatest disadvantage presents itself in that many of these people are incurable, many cannot be relieved even by the best of orthopedists, and they will go away disappointed and dejected, feeling that no interest was taken in them either because they are poor or because Dr. Lorenz's visit is more or less spectacular. This is invariably the sequel to a visit of this sort by a man so widely known, but in this event the orthopedists will have to get together

and do what they can to help the curables or, at least, those who can be benefited by their services.

COLLOID GOITER

Major Robert McCarrison, of the Indian Medical Service, chancing to be in Minneapolis on November twenty-ninth, was invited to address a joint meeting of the Hennepin County Medical Society and the Minneapolis Dental Society. The meeting-room was crowded in spite of the fact that the members had received only telephone notices that Dr. McCarrison would be there. He is a stocky Englishman, approximately forty-five years of age, and has devoted himself (in the most northern point of India) to the study of goiter or, rather, to the study of the thyroid gland. He gave his audience a very descriptive account of his location north of the Himalayas, a six-day journey from a railroad station, where he had carried on research work relative to the thyroid gland and its disorders. Of course, it was impossible to cover a very large field in a one-hour lecture, but he reviewed the subject, which is doubtless known to many who have studied the thyroid gland, so interestingly that everyone carried away an impression of having gained something from hearing Dr. McCarrison. His talk was illustrated by lantern slides showing the percentage of goiters that occurred in various regions in India, and also some slides which showed the goiter as it was, enlarged and deforming in its aspect, and, later, the disappearance of the goiter under proper medical treatment.

Dr. McCarrison brought out one or two very interesting points. One was that there were very few cases in all of India, as far as he could determine, of the exophthalmic type. They were present, but the numbers were very small and the disease occurred only among the people from other countries who had either emigrated to or sojourned in India,—the English, the half-castes, and the Parsees. He explained the disappearance of the old theory that colloid goiters were due to the deposit of lime and magnesium salts in the thyroid gland, and he told his audience, too, that the various conditions which have been known in Switzerland for some time, of large thyroids in cretinism and myxedema, were in no way due to the deposit of salts, but, as in India, that they were doubtless due to the pollution of streams. Then he told of a stream in his vicinity, in India, where from 11 to 45, and as high as 60 per cent of the inhabitants of villages along the stream have goiters. To further prove the theory of water-pollution he and fifteen picked men subjected themselves to the drinking of filtered water taken from a portion of the stream after it had passed through several villages. And he had fifteen other men who were his controls, who drank only of water that had not been polluted. During this experiment he and his fifteen men all developed goiter, and as far as can be determined all of them were relieved of their goiter by methods of treatment, while of the controls who were better situated and drank only from the clear streams none had goiter. He deduced from these experiments that colloid goiter was due to bacteria taken into the gastro-intestinal tract from polluted water, thence into the blood-stream, later producing goitrous patients. He further endeavored to show that these same people were treated successfully by a vaccine made from the gastro-intestinal dejecta, together with the administration of thymol for its intestinal antiseptic properties, and an increase of iodine as a chemical and as a remedial suggestion. He was thus able to cure a large number of cases, and evidently from what he said these people were curable under medicinal measures, and were thus saved from operative procedure. What the percentage of cures was he did not say. He seemed like a very modest, unassuming man, and his statements were taken at their face value. Even if he presented nothing definitely new, at least it struck some of his hearers as being new and of vital importance, and one would easily be led to the study of goiter from a different standpoint than has usually been the practice.

MINNEAPOLIS CITY POLITICS

Minneapolis is again exposed to shame and disgrace by an effort on the part of the Council and certain members of the Welfare Board to demonstrate the dirty side of political life. One member of the Welfare Board, Dr. J. M. Kistler, who did not come up for reëlection on the Council, has maintained a strangle hold on the Welfare Board simply because he thought it his duty to obstruct Council legislation and prevent his successor from being elected. Incidentally, it appears that he is making a last and, we hope, futile effort to eliminate our present Health Officer, Dr. Harrington.

Dr. Harrington has never been popular with Dr. Kistler, probably because they could never look through the same lenses and get the same perspective. Then, too, Dr. Kistler has not forgotten his effort to prevent reëlection of Dr. Mabel Ulrich to the Board of Welfare, so that politics has dipped into our welfare work and created dissension in the Council, and so far, no successor has been elected to fill Dr. Kistler's place.

The Socialists in the Council have been able to prevent the consummation of what should be for the good of the public. They have clung together and stuck together, voting for a socialistic member of the Board of Welfare. The people are getting very tired of it, and the various city clubs and associations have been endeavoring to secure a peaceful settlement. So far they have been unable to do anything for the good of the service.

Then, too, some months ago the Board of Public Welfare appointed two physicians, against the advice and request of Dr. Harrington, who were to be on call for epidemiological work, or at least should be called in in questionable cases of contagious diseases. These two men were to be paid six dollars a day, and although they made but three or four visits during the entire term of their office, the Board of Public Welfare has been obliged to pay them at this rate for the full term of service. Recently, some adverse legislation, or rather retraction on the part of the Board of Public Welfare, dismissed these men from service, or at least proposed to pay them only for actual work done. But they had been paid for a term of service, and the Council instructed the City treasurer to hold up the salary voucher of Dr. Harrington to cover the amount that was overpaid to these two men, deducting the same from his salary. This may be good business, but it sounds to us like political intrigue and poor business.

We are waiting now to see what the next step is to be. Mayor Leach was urgently requested, by numerous people, so we are informed, to discharge or dismiss Dr. Harrington from office so that he might return to the United States Public Health Service, but Mayor Leach refused to be caught in the political net and is evidently trying to maintain a dignified attitude toward the Health Service. He may be defeated, and Dr. Harrington may be dismissed, and then we shall go back to the old-style health officer,—a political appointee and probably not a very satisfactory one. It takes a very strong man to be a city official unless he is willing to become a part of the political scheme of the Council, or unless he is willing to associate himself with men who are politically dishonest and who care only for their own opportunities, either for political advancement or a reward to a henchman. How long the Minneapolis public will have to suffer from this kind of political manipulation no one knows, and apparently very few care, and that is the great point. If people would get out and elect the proper representatives to the Council and get away from all this disturbance and disorder, we might run along smoothly in our health department.

BOOK NOTICES

Diseases of the Skin. By Richard L. Sutton, M. D., Professor of Diseases of the Skin, University of Kansas School of Medicine, etc. With nine hundred and sixty-nine illustrations, and eleven colored plates. Fourth edition, revised and enlarged. St. Louis: C. V. Mosby Company, 1921. Price $9.50.

The modern work on diseases of the skin covers a wide range, and includes practically every disorder with a cutaneous manifestation. In doing this it must of necessity give a description of affections that would appear to belong more properly to other domains of medicine. In this book, for instance, pellagra is described because of its dermatitis. Yet at first sight pellagra would seem to belong to general internal medicine. So too might mucous cyst and ingrowing toenail be considered as belonging to surgery; measles, scarlet fever, and thrush to pediatrics; chancroid to genito-urology and syringomyelia to neurology. In these days the overlapping of the different departments of medicine is so extensive that definite boundary lines can be made out no longer.

There is an advantage in looking at the same disease from different standpoints, particularly when it comes to the matter of treatment. For instance, in the case of the cutaneous manifestations of syphilis this book gives minute directions for treating the various eruptions, a subject little dwelt upon by works on general medicine or even by the syphilographer. Incidentally attention should be called to the valuable and complete references on syphilis, four pages of fine print, forming an index medicus on the subject. Indeed, the references on all skin subjects are remarkably full and add greatly to the value of the volume.

Vaccine therapy is always interesting, and Dr. Sutton has much to say about it, having tried it thoroughly in a great variety of skin diseases. He is not an enthusiast in general, but by no means is he inclined to deny that the method has value, that is, autogenous vaccines, for the stock vaccines he personally has found practically valueless. It is to be noted that in several diseases, for instance, furunculosis, he has tried an

autogenous vaccine from the colon bacillus, apparently with as good results as from the use of the specific germ of the disorder.

In general, it is fair to say that there is no book on dermatology more likely than this one to meet the needs of the medical man. To what is to be found in general literature it adds the personal observation and experience of the author, and if there is not much new to tell it at least tells the old in a new way, and that is one of the most useful things that a writer can do.

WM. DAVIS, M. D.

NEWS ITEMS

Dr. W. A. Coventry, of Duluth, was married on December 3.

Dr. A. F. Panek has moved from Milton, N. D., to Minto, N. D.

Dr. R. E. Holvey, of Lead, S. D., died last week at the age of 46.

Dr. Thomas H. Lewis has moved from Sutton, N. D., to Fargo, N. D.

Dr. O. B. Sheets has moved from Carthage, S. D., to Hollywood, Calif.

Owatonna is to have a detention hospital at a cost of several thousand dollars.

Harlowton, Mont., has a campaign on to raise a large fund for the Gallard Hospital of that city.

The Lakeview Hospital at Mora, Minn., erected by Dr. C. S. Bossert, of that place, opened last week.

Drs. F. H. Clay and Wm. Ohm, of St. Charles, have purchased ground and will erect a new office building.

Dr. R. Reagan, of Sioux Falls, S. D., was married last month to Miss Helen A. Johnson, of Cokato, Minn.

Dr. P. E. Stangl, of St. Cloud, will erect a medical building in that city. It will be made a modern medical office building.

The Mounds Park Sanatorium, of St. Paul, is to have a roof garden added to its building for the use of convalescent patients.

The Y. W. C. A., of Mitchell, S. D., has caused a health survey of that city to be made by Dr. Eva M. Blake, of New York City.

Dr. F. W. McCrimmon, of Butte, Mont., died last week at the age of 50. Dr. McCrimmon had practiced in Butte about thirty years.

Dr. H. L. Knight, gastro-enterologist of the Eitel Hospital of Minneapolis, has resumed his work after a severe illness of several months.

Dr. E. L. Hall, of Russell, has located in Princeton. Dr. Hall is a graduate of the Medical School of the University of Minnesota, Class of '02.

Dr. K. H. Van Norman, of Baltimore, Md., recently appointed superintendent of the Miller Hospital of St. Paul, has begun his work at the hospital.

Dr. W. D. Steels, pioneer physician of South Dakota, who took up a homestead near Huron in 1881, died last month in Plymouth, Ind., at the age of 86.

Major Robert McCarrison, of the British Medical Service in India, spoke before the Hennepin County Medical Society last month on the thyroid gland.

Of the 225 applicants for admission to the Medical School of the University of Minnesota, only 84 could be accepted because of a lack of accommodations.

The thirty-fifth anniversary of the founding of Maternity Hospital of Minneapolis was observed last week in honor of its founder, the late Dr. Mary G. Ripley.

Prohibition is manifesting its workings in a peculiar way, namely, in a decrease in the number of bodies sent to the medical schools for dissecting purposes.

The Minneapolis Shriners are raising $10,000 as their part of the cost of the Shriners' Hospital for Crippled Children, now under construction in Minneapolis.

Jamestown, N. D., is giving its needy residents a series of free evening clinics. The physicians of the city donate their services, and the druggists sell medicine at cost.

Dr. I. C. Vangness, of Beresford, S. D., has sold his practice to Dr. L. A. Haug, of Canton, S. D., and has become associated with Drs. Townsend and Nervig, of Sioux City, Iowa.

Dr. J. W. Andrews, of Mankato, will be a candidate for the State Senate next year. Dr. Andrews has been an invaluable member of this body on all matters pertaining to public health.

The Brown Redwood County Medical Society has begun suit against the Minnesota State Medical Association for restoration of the State Association. The case has already been in the courts.

The U. S. Civil Service Commission needs a medical interne for St. Elizabeth's Hospital, Washington, D. C. The salary is $1,200 and maintenance. The Commission will furnish particulars.

The public nutritional clinics being held in Minnesota and other states are finding many

handicapped children in the public schools who have greatly suffered from their backward state of development.

Dr. John Towey, assistant superintendent of the Southwestern Minnesota Tuberculosis Sanatorium at Worthington, has resigned to accept tuberculosis work for Michigan, with headquarters at Ann Arbor.

"Bids Wanted" is found in many newspapers of the Northwest at this season of the year. The lowest bidder for the medical care of the poor will be given the job. What a discredit such a course should be to any decent community!

The State Sunshine Society of Minneapolis has given the Minneapolis General (City) Hospital a piano. It will add much to the weekly moving picture shows given by the hospital and will give pleasure to all the patients in the hospital.

The stockholders of the St. James Hospital of St. James are considering its sale to the Catholic Sisters of the Order of St. Joseph. The building is a beautiful and commodious structure, and the hospital would, no doubt, be a great success in the hands of the Sisters.

Washington red tape will prevent early action in providing for the needs of Indians of the White Earth Reservation who are suffering from tuberculosis and trachoma. Dr. Chesley, of the State Board of Health, has done all in his power to protect these Indian sufferers.

Dr. Palmer R. Bowdish, formerly of Cornwall-on-the-Hudson, N. Y., and lately connected with the Massachusetts State Board of Health, has been appointed medical director and superintendent of the Sand Beach State Tuberculosis Sanatorium, near Detroit (Minn).

The Southern Minnesota Medical Association, at its annual meeting held in Mankato, last week, elected the following officers: President, Dr. W. F. Braasch, Rochester; vice-president, Dr. W. F. Condit, Minneapolis; secretary-general, Dr A. F. Schmitt, Minneapolis; secretary-treasurer, Dr. H. T. McGuigan, Red Wing.

For the week ending Dec. 3 there were reported 165 cases of diphtheria in Minnesota, of which number 86 were from the State at large, 48 from Minneapolis, 28 from St. Paul, and 2 from Duluth. The disease is of so mild a form that even physicians overlook it, which emphasizes the necessity of making cultures in all throat cases.

Graduates of the Medical School of the University of Minnesota who go to hospitals in different parts of the United States for their year of interneship are winning high praise for the Minnesota Medical School. As this commendation comes from many sources it clearly indicates the high character of the work done in the Minnesota school.

The World War taught us to think and talk in *billions,* an almost hitherto unknown word. A Minneapolis paper was infected, and it announced the other day that "150" physicians and surgeons of Minneapolis had gone to Mankato to attend the meeting of the Southern Minnesota Medical Association, held there last week. Another paper counted the lot, and said "30" had gone. A St. Paul paper said "a number" had gone from St. Paul. As one is "a number," Minneapolis may have sent "150" times as many physicians and surgeons as St. Paul sent to this notable meeting.

PHYSICIAN WANTED

A young man with surgical ability to locate in a thriving small town in central Minnesota, five miles from a well-equipped hospital, to work with the owner of the hospital. Eventual partnership in view. Address 191, care of this office.

TECHNICIAN WANTS POSITION

A young woman of fine training as a technician who has acted as an assistant and nurse in a well-known physician's office, desires a position, and will go outside of the city if necessary. Address 192, care of this office.

UNAPPOSED PRACTICE FOR SALE

In a town in southern Minnesota of 500 inhabitants, an up-to-date town that has supported two physicians. Practice at price of office equipment. Reason for selling is poor health. Address 193, care of this office.

PHYSICIAN WANTED

An experienced physician wanted in a good live Montana town of 1,200, in irrigated district. Must be a good man. Nothing to buy. Full particulars on request. Address 194, care of this office.

YOUNG DENTIST WANTED

A young energetic dentist is wanted in a South Dakota town of 1,200 people with an up-to-date hospital and the *x*-ray apparatus of a physician at his service. Ability to speak German would be to his advantage. A chance of a life time. Address 195, care of this office.

P. AND S. SYSTEMS FOR SALE

I have a McCaskey Cabinet and Desk System for sale cheap. Will sell either on terms. Address 196, care of this office.

HOSPITAL FOR SALE

On account of joining a group in city, a new, well-built, pressed-brick, 35-bed hospital building in a good town in the northwest is offered for sale. Modern and thoroughly equipped from basement to attic. An excellent location for practice of medicine and surgery, especially for one speaking German or Scandinavian or both. Small amount of money will handle it. Address 199, care of this office.